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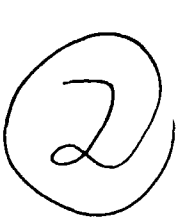

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NAVY C3 IN A SOCIOLOGICAL CONTEXT:
WHY FORWARD PRESENCE MATTERS

by

Stefani G. Cuthbert

June 1993

Thesis Advisor: R. Mitchell Brown

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The purpose of this thesis is to determine the impact of forward deployments and combined exercises on U.S. Navy command, control, and communications (C3). This thesis looks beyond the technological, operational, and logistical aspects of Navy C3 into the sociological realm. This thesis proposes that no matter how technol. gically advanced C3 may become, the human factor and vital human interactions will remain essential to ensure C3 effectiveness. An argument is developed that forward deployments and combined exercises are more than just means to test C3 equipment and procedures. They furnish essential "road tests" for Navy C3; they enable Navy C3 to work on a multinational, coalition basis. Often the first on-scene military force, the U.S. Navy, most likely operating as part of a coalition, will need to establish C3 in the area. To do so, it must be able to interact effectively with coalition partners. A naval force which conducts forward deployments and combined exercises must necessarily be sized foi that forward presence mission rather than solely a crisis response mission, which would require a smaller force.

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Navy C3 in a Sociological Context:
Why Forward Presence Matters

by

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Lieutenant, United States Navy
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Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE IN SYSTEMS TECHNOLOGY

from the

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Command, Control, and Communications Academic Group

ABSTRACT

The purpose of this thesis is to determine the impact of forward deployments and combined exercises on U.S. Navy command, control, and communications (C3). This thesis looks beyond the technological, operational, and logistical aspects of Navy C3 into the sociological realm. This thesis proposes that no matter how technologically advanced C3 may become, the human factor and vital human interactions will remain essential to ensure C3 effectiveness. An argument is developed that forward deployments and combined exercises are more than just means to test C3 equipment and procedures. They furnish essential "road tests" for Navy C3; they enable Navy C3 to work on a multinational, coalition basis. Often the first on-scene military force, the U.S. Navy, most likely operating as part of a coalition, will need to establish C3 in the area. To do so, it must be able to interact effectively with coalition partners. A naval force which conducts forward deployments and combined exercises must necessarily be sized for that forward presence mission rather than solely a crisis response mission, which would require a smaller force.

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EXECUTIVE SUMMARY

The purpose of this thesis is to determine the impact of forward deployments and combined exercises on U.S. Navy command, control, and communications (C3). This thesis looks beyond the technological, operational, and logistical aspects of Navy C3 into the sociological realm. This thesis proposes that no matter how technologically advanced C3 may become, the human factor and vital human interactions will remain essential to ensure C3 effectiveness. An argument is developed that forward deployments and combined exercises are more than just means to test C3 equipment and procedures. They are the core of Navy C3; they enable Navy C3 to work on a multinational, coalition basis. Often the first on-scene military force, the U.S. Navy, most likely operating as part of a coalition, will need to establish C3 in the area. To do so, it must be able to interact effectively with coalition partners.

This study begins with an analysis of the impact of the Navy and Marine Corps White Paper, "...From the Sea" on four key areas: Navy C3, coalition operations, force sizing, and amphibious forces. The White Paper establishes that U.S. naval forces must be able to operate both with and within a coalition. To be effective in this role, they must be able to connect as well as communicate, beyond making the electronic connections, with coalition partners. Key to successful C3 are forward deployments and combined exercises. Hence, a naval force which conducts forward deployments and combined exercises must

necessarily be sized for that forward presence mission vice solely a crisis response mission, which would require a smaller force.

Since coalition warfare is a fact of life in a world of smaller militaries, the multicultural nature of coalition forces is an issue which must be addressed and fully considered. An extensive study on multiculturalism establishes that there are natural inherent barriers to effective communications. Two mini-case studies involving Arabs and Jews in Israel and American and Japanese businessmen illustrate how dissimilar cultures communicate in very different ways and demonstrate the vital importance of understanding another's culture if communication is to occur. Lessons learned in the Gulf War reveal that continual interaction with potential coalition partners, through forward deployments and combined exercises, accrues intangible benefits resulting in a more effective coalition force.

A case study of U.S., British, and French C3 illustrates how three culturally similar countries can have vastly disparate views of what actually comprises C3. Each country's culture is different enough to give it a unique strategic culture and hence a distinct perspective. Thus, achieving effective interoperability in C3 with allies, when agreement cannot be reached between those allies as to what C3 in fact is, remains inherently difficult.

This thesis concludes that:

- Optimal C3, a recognized force multiplier--especially valuable in an era of downsizing--can be achieved by knowing

one's force: extending beyond the tangible technical, operational, and logistical aspects to the sociological realm. Forward deployments and combined exercises enable commanders to truly know their forces in a coalition environment. Ongoing associations with future coalition partners are fundamental to successful Navy C3, and successful Navy C3 is key to successful contingency response.

- A long-term, permanent negative impact inures from closure of overseas U.S. bases. The lack of overseas bases leads directly to a dearth of overseas presence by U.S. Army and Air Force units. The resultant deficiency can be covered by U.S. naval forces operating forward, "from the sea." U.S. naval forces are less reliant upon permanent basing arrangements and can utilize politically defused, much less formal port visits not only for replenishment, but also for "showing the flag."

- The U.S. Navy is the only service capable of rapid, sustained, credible response. A coalition, built on trust which comes from working together, can provide an even bigger, more capable force.

- With dwindling resources, the West must necessarily rely on coalition warfare. The U.S. needs to be able to rapidly form and become a part of an effective coalition in crisis. However, in order to be able to do that, the U.S. must sustain positive global relationships. The best, most efficient way to maintain these relationships is with U.S. naval forces. They are mobile, flexible, and designed to operate out of area, as are some other nations' navies. With their forward presence role, they remain the ideal instrument for diplomacy enhancement and continuation.

- By the year 2000, a much smaller military and consequently a smaller Navy is envisioned. The question is, "How much smaller will U.S. naval forces in fact be?" There is one overriding dilemma which makes answering this key question particularly difficult: The smaller the U.S. force, the more dependent that force becomes on allies; with increased dependence on allies, comes a greater need for interaction--which requires forward deployments and consequently a larger number of forces--with those same allies to ensure a viable coalition in time of crisis. Resolving this circular dilemma, and determining the right size of U.S. naval forces, is extremely complex; the intrinsic value of forward deployments and combined exercises, key to making coalition warfare work, must not be overlooked. At the same time, these forward deployments require sufficient U.S. naval forces in order to realize continuous forward presence.

- To maintain Navy C3 interoperability with potential coalition partners, the U.S. Navy must continue forward deployments and combined exercises to provide a credible force capable of crisis response but not necessarily sized specifically for crisis response. Without this forward deployed component, key to the sociological dimension of effective C3, effective communications--the vital "C" in C3--cannot be expected, no matter how much is spent on technological improvements to C3 systems.

I. INTRODUCTION

The purpose of this thesis is to determine the impact of forward deployments and combined exercises on U.S. Navy command, control, and communications (C3). The thrust of this thesis is to look beyond the technological, operational, and logistical aspects of Navy C3 into the sociological realm. Further, this thesis proposes that no matter how technologically advanced C3 may become, the human factor and vital human interactions will remain essential to ensure C3 effectiveness. An argument is developed that forward deployments and combined exercises provide more than just media to test C3 equipment interoperability and procedures. The premise of this thesis is that forward deployments and combined exercises are at the core of Navy C3; they are actually enablers key to making Navy C3 work on an international, coalition basis.

A. ORGANIZATION

The first chapter discusses the purpose of the thesis and describes the major elements and methodology of this study.

Chapter II provides the background which was the impetus for the thesis. The White Paper, "...From the Sea," has

several implications for Navy C3, one of which is the requirement for the U.S. Navy to be able to operate both with and within a coalition. To be effective in this role, U.S. naval forces must be able to "connect" as well as communicate, beyond making simple electronic connections with coalition partners.

Chapter III describes the difficulty of applying traditional wargaming and simulation techniques to model Navy C3 in a coalition scenario. This chapter concludes with a statement of the need to develop tangible measures of effectiveness (MOE's) for forward presence and how these relate to Navy C3.

Chapter IV provides an extensive analysis to address multiculturalism and its effect on Navy C3. Two mini-case studies are presented to illustrate how dissimilar cultures communicate in very different ways. Concluding this chapter are two specific examples of how C3 difficulties can occur between even the closest allies.

This examination of cultural differences sets the stage for Chapter V, which demonstrates how three culturally similar countries can have vastly disparate views of what actually comprises C3. A C3 case study of the United States, Great Britain, and France is presented. The study depicts how each country's culture is different enough to give it a unique strategic culture and hence a distinct

perspective. Thus, achieving effective interoperability in C3 with allies, when agreement cannot be reached between those allies as to what C3 in fact is, remains inherently difficult.

Chapter VI features a case study from naval aviation to illustrate the critical importance of relationship building to effective communications and success.

Analysis is the subject of Chapter VII. How do military downsizing, mission realignment, and overseas base closures impact the Navy and Navy C3? How do these factors influence the issue of coalition formation? How are forward deployments and combined exercises necessary for effective coalition operations? Are there quantitative measures of effectiveness (MOE's) for assessing the value of forward deployments and joint/combined exercises?

Chapter VIII closes with conclusions and C3 policy recommendations.

B. BACKGROUND

There are four main aspects to Navy C3: technological, operational, logistical, and sociological. Often overlooked, yet essential, is the sociological factor. Why is it the "neglected dimension" (Stares, 1991, p. 1) of Navy C3? There are three possible reasons, which are discussed

below: C3 definition ambiguity, sociological definition ambiguity, and the negative connotation of the word "sociological" itself.

1. C3 Definition Ambiguity

> C27E: command, control, communications, computers, cohesion, counterintelligence, cryptanalysis, conformance, collaboration, conceptualization, correspondence, camaraderie, commissaries, camouflage, calculators, cannon, caissons, canteens, canoes, catapults, carpetbaggers, caddies, carabineers, carrier pigeons, corn whiskey, camp followers, calamine lotion, etc. (Todd, 1986, p. 14)

C2, C3, C3I, C4I, C4I2: It does not matter what one calls it; just as there are many names for "it," there are a multitude of meanings for and perceptions of "it." Whether one calls it command and control (C2) or command, control, communications, computers, intelligence, and interoperability (C4I2), its true meaning still remains elusive. One's perspective colors one's interpretation of C3. For communicators, communications is the heart of C3. General Omar Bradley once said, "Congress can make someone a general, but it takes communications to make him a commander." (Eskew, 1983, p. 142) For computer experts, C3 encompasses the computer world, or vice versa. The intelligence community insists C3 is impossible without its invaluable inputs. Systems analysts prefer to discuss C3 in terms of architectures and structures. Some specialists argue C3 should be thought of primarily in terms of human

issues: How do people make decisions, and how can equipment or procedures aid decision-makers? Some military leaders might see C3 simply in terms of a chain of command.

Former U.S. Senator Gary Hart writes about C3 only in terms of "command and control equipment," defined as "radios and other devices soldiers use to talk to each other in combat." By his definition of C3, he concludes that "we don't want command and control in combat." (Hart, 1986, p. 51) Obviously, C3 can mean different things to different people, so planners and analysts must be particularly careful when considering it. Some of C3's different contexts are illustrated in Figure 1 below:

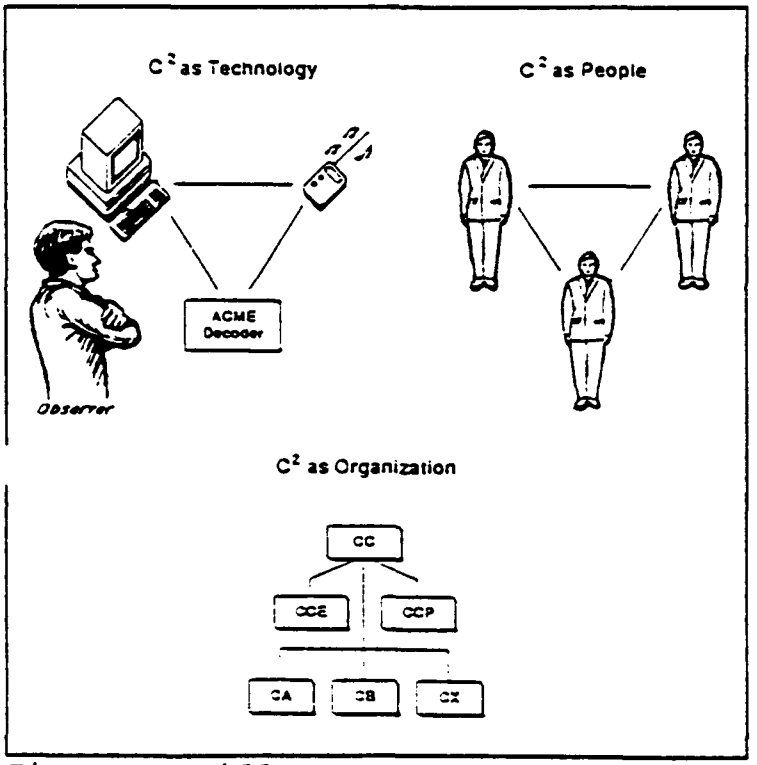

Figure 1: Different Contexts of C3 Debates (Oakley, 1992, p. 11)

The point of the above discourse is that C3 and C3 systems are not objects; they cannot be easily described with a concise definition. Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms, however, provides the following definition of C2:

> Command and control is the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission.

The definition also stipulates that:

> Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

Unfortunately, this definition does little in the way of narrowing down C2/C3. It merely demonstrates how broad an area C2/C3 is. In fact, one could ask if "command and control" are verbs or nouns. Put simply, they are both. As verbs, they tell what the commander does. As nouns, they ascribe the arrangement of people, equipment, and procedures that helps commanders do what they do; they name a system. (Oakley, 1992, p. 17) Regardless of their context, the words "command and control" simplify to decision-making in support of mission accomplishment. Another method of

defining C2/C3 is with a model. Perhaps the most widely known and used model is Jay Lawson's, which is shown below in Figure 2:

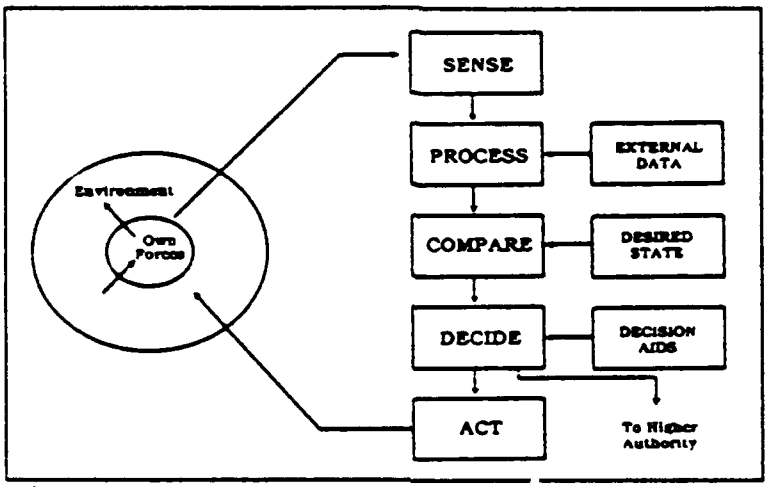

Figure 2: Lawson's Model of the C2 Process (Oakley, 1992, p. 32)

As the above discussion demonstrates, C3 is a difficult term to concisely describe. Hence, it is most easily understood in its technological, or hard, context versus its sociological, or soft, context.

2. Sociological Definition Ambiguity

Not only is C3 itself a difficult concept to grasp, but its sociological aspect is difficult, if not impossible, to quantify. Furthermore,

> ...our fascination with technology can relegate human issues of command to secondary status. We sometimes focus on the problems for which there are technological fixes, rather than on more important, difficult, or subtle issues. The fact is that most of our past failures in C2

have resulted from poor organization or poor decisions, not technological shortcomings." (Oakley, 1992, p. 180)

As will be demonstrated in Chapter III, the sociological facet extends beyond coordination and cohesion. It is extremely elusive.

3. Negative Connotation

Last, but extremely important to this study, is the reality that military warriors are simply not comfortable discussing or expounding upon the virtues of fostering relationships and relationship building. This is one of those "touchy feelly" areas it is often best to avoid. The mere mention of the word "sociological" to most military personnel elicits groans and grimaces. Numbers and statistics are preferred methodologies to studying the complex C3 issue. But these purely numerical analyses lack inclusion of the most important factor: the human factor.

In the opening address at the Armed Forces Communications and Electronic Association (AFCEA) Europe Oslo Symposium in April 1989, Vice Admiral Torolf Rein (Commander, Allied, Forces, Northern Norway) conceded that "without the human element in the C2 loop, C2 would never be exercised, regardless of the sophistication of the systems." (Rein, 1989)

C. METHODOLOGY

In the course of this study, an attempt was made by the author to somehow model the thrust of this thesis: the impact of forward deployments and combined exercises on Navy C3.

1. Cooperation Under Anarchy

First, cooperation under anarchy, a popular area of political science study, was investigated. Prisoner's Dilemma, a well-known game used quite extensively in the political science arena, also was considered as a potentially viable game to model this thesis' question.

However, as in almost all treatises on cooperation, the Prisoner's Dilemma discusses cooperation in a "cooperation versus competition" context. In a navy coalition scenario, "cooperation versus competition" is not truly the area of prime concern. Admittedly, in the theoretical and purest sense, it is a "if you're not for us, you're against us" scenario; hence it becomes cooperation versus competition. However, this thesis is not addressing how to win over nations to the coalition. Indeed, much research has already been conducted in that area:

> Research on coalitions has focused on questions of coalition formation: which parties will go together? Furthermore, the question of how to divide the joint result of a coalition agreement has found much interest in coalition research. What is typically lacking in laboratory experiments on coalition formation but what is essential for cooperation is the necessity to establish

> co-orientation and co-action between groups to begin or to continue cooperation. (Feger, 1991, p. 287)

It is this "co-orientation and co-action between groups" which is the focus of this study. The emphasis will be on how to improve efficiency and cooperation through relationship building, which is a natural consequence of operating with those forces--truly "co-operating."

2. Cohesion Studies

Cohesion and studies regarding cohesion were also considered as model possibilities. However, cohesion actually applies to a single nation's military and, more specifically, to that nation's military's components (for example, the Israeli Army).

Due to the lack of a valid model, there are no statistical analyses, computer programs, or computations in this thesis. Even a widely accepted game from the political science field cannot be used. Instead, this thesis will discuss that intangible, neglected dimension of Navy C3: the sociological dimension. Multiculturalism and the need to consider its importance in coalition formation also is addressed. Finally, an attempt is made to develop some C3-related MOE's for Navy forward presence, as manifested in combined exercises and forward deployments.

II. "...FROM THE SEA"

> "...From the Sea" is an effort to change the course of naval strategy, articulating the role of the naval services in the new, uncertain security environment. It returns naval forces to their expeditionary roots. (Heim, 1992, p. 26)

A. BACKGROUND

"... From the Sea," published in September 1992, is the Navy and Marine Corps official articulation of their strategy and direction for the twenty-first century. In this concise document, the two services are characterized as "Naval Forces" to underscore the idea of the Navy/Marine Corps team as one single integrated operational unit.

More revolutionary than the idea of a true Navy/Marine Corps team is the new mission and direction put forth for these forces in "...From the Sea":

> a fundamental shift away from open-ocean warfighting on the sea toward joint operations conducted from the sea. The Navy and Marine Corps will now respond to crises and can provide the initial, 'enabling' capability for joint operations in conflict.... (O'Keefe et al., 1992, p. 93)

Inherent in this shift is the elevation of the Marine Corps role; the Marines necessarily become a more significant partner in the team; they are accepted as part of one single integrated unit. Also inherent in this new mission is the

requirement that the Navy now focus on the entire campaign--the big picture which includes all the services--rather than on a single operation or campaign primarily against enemy naval forces.

Critics say that "...From the Sea" was "too little too late." (Heim, 1992, p. 26) Superficially, it may appear so. But a closer look reveals more. "...From the Sea" did not just happen. In fact, it took two years to formulate and one year to hone. According to Lieutenant Colonel Alan P. Heim, currently a National Security Fellow at Harvard University, the groundwork was laid in July 1990, when the Chief of Naval Operations (CNO), Admiral Frank B. Kelso, the Commandant of the Marine Corps, (CMC) General Al Gray, and the Secretary of the Navy (SECNAV), H. Lawrence Garrett, met to discuss a much needed new unified naval strategy.

> The significance of this summit's decisions cannot be underestimated. For the first time in decades, the Navy and the Marine Corps were coming together to formulate a true naval strategy, which would make naval forces partners in a truly joint team. (Heim, 1992, p. 26)

This consolidated strategy was a revolutionary concept, replacing the two separate maritime and amphibious strategies. Ultimately, the result of this new strategy was the precursor to "...From the Sea": "The Way Ahead," published in April 1991 (Heim, 1992, p. 26). Unfortunately, the document lacked substance and therefore, support. It had little impact and went virtually unnoticed. However,

like the President's unheralded speech at the Aspen Institute in August 1990 (NS3252 class notes, 1991), "The Way Ahead" introduced an unprecedented, important shift in thinking. The concept of "Naval Forces"--the Navy/Marine Corps team--vice strictly Navy forces, was presented. From this baseline grew "...From the Sea," also known as the White Paper.

Much of what follows concerning the development of the White Paper was discussed in a telephone conversation between the author and Commander Starr King (N-812C4) on 16 March, 1993. The evolution was not an easy nor a quick one. Rather, it was the culmination of a year's worth of effort; specifically, the Naval Force Capabilities Planning Effort (NFCPE). Also known as the Baker Study, since it was headed by Rear Admiral Ted Baker (OP-60), the NFCPE was established in the fall of 1991 by then Secretary of the Navy H. Lawrence Garrett via the CNO and the CMC. Efforts began when several commanders and captains met with Marine Corps counterparts at Quantico for a meeting that evolved from weeks into months. This group discussed and formulated naval strategic concepts which were later to become "... From the Sea." The evolution into "...From the Sea" was a painful, contentious process which took a full year. "...From the Sea" was published in September 1992, a year after the initial establishment of the NFCPE.

B. ANALYSIS

"...From the Sea" has had its share of critics, including Michael Vlahos, Center for Naval Analyses expert. He views "...From the Sea" as a politically correct, "deflecting kind" of white paper which does not meet change head-on but instead tries to "deflect change's full impact." He asserts that "...From the Sea" misreads change. He warns that "change is not complete" and that it furthermore is not controlled by normal politics. He claims that three factors will drive the Navy: budget, society, and enemy, or lack thereof. According to Vlahos, the White Paper does not adequately address these problems. He concludes that a white paper must accept a new Navy reality and accept the fact that change is ongoing and will not stop. (Vlahos, 1993, p. 47)

Vlahos makes profound, valid points. However, "...From the Sea" should not be viewed as an end in itself. It is a first step; it is a transitory document. It may appear narrow in the respect that, as Vlahos says, it sees change as essentially complete:

> The Cold War world has been replaced by a New World Order. The Third World War has been replaced by Desert Storm and Restore Hope. End of story. (Vlahos, 1993, p. 47)

This author asserts that "...From the Sea" was never meant to be the final word on the Navy and Marine Corps

vision. It is not the "end of story" concerning that vision. It lays the foundations for continuing change. It is a stepping stone.

It may be "politically correct," but it is much more. It depicts efforts by the Navy and Marine Corps to get on board with and meet head-on the changing environment in an era of uncertainty.

However, other critics object to the new mission which the Navy has carved for itself. The answer to this criticism is that the Navy did not originate the idea of shifting the focus from a global threat to a regional one. World events shaped that shift. And in response to the changing world, the U.S. National Security Strategy changed, which prompted a revamping of the U.S. National Military Strategy; "...From the Sea" flowed directly from the U.S. National Military Strategy (O'Keefe et al., 1992, p. 93). It, or something like it, was inevitable in response to both the declining defense budget -- and its subsequent impact of downsizing -- and the changing threat, or "challenges and opportunities."

So, what did happen to the old global missions of power projection and sea control? Power projection is elusive to measure, being somewhat unquantifiable. However, "power projection" per se is addressed in "...From the Sea" and is in fact one of the four key operational capabilities cited

to execute the new direction of the Navy and Marine Corps. (The other three are Command, Control, and Surveillance; Battlespace Dominance; and Force Sustainment. Command, Control, and Surveillance will be discussed in depth later.)

Sea control, though more tangible than power projection, is not discussed outright in "... From the Sea." Former SECNAV Sean O'Keefe contends that "it is ... a given. ...we have sea control covered at this point." (Rainbow and Miller, 1993, p. 73) His reasoning is that by definition, the U.S. maintains sea control as the preeminent world power. It is interesting to note how sea control is subtly addressed in "...From the Sea":

> Our ability to command the seas in areas where we anticipate future operations allows us to resize our naval forces and to concentrate more on capabilities required in the complex operating environment of the "littoral" or coastlines of the earth. (O'Keefe et al, 1992, p. 93)

The underlined words are important; they imply a type of selective sea control. This is not the sea control as we have traditionally known it; but with the mandated downsizing, there seemingly can be no other type of sea control.

C. IMPLEMENTATION

"...From the Sea" can be criticized as perhaps weakest in its implementation aspect. Article VI., entitled "Implementation," falls short of describing that process.

The establishment of the Naval Doctrine Command is a start; but the details on how this new command is to

> provide for smooth integration of Naval Forces into joint operations at any level, translate 'operational maneuver from the sea' into naval doctrine (O'Keefe et. al., 1992, p. 96)

and "build doctrine for expeditionary warfare" (O'Keefe et. al., 1992, p. 96) simply are not there.

Most likely, those details were unknown and were to be determined by the new Naval Doctrine Command itself. During the Cooke Conference held at the Naval Postgraduate School 2-4 March, 1993, Captain Peter Bulkeley, USN, of Commander, Naval Doctrine Command (COMNAVDOCCOM) stated that the "capstone publications" to be revised by COMNAVDOCCOM were Naval Warfare Publications (NWP's) 0-9. Through these capstone publications, COMNAVDOCCOM would, in Captain Bulkeley's words, "create naval doctrine." COMNAVDOCCOM will also study "the applicability of the composite warfare commander concept to littoral warfare." (Morton, 1993, p. 118)

The importance of the new doctrine command cannot be overemphasized. In this era of dramatic personnel and billet cutbacks, 50 new billets were allocated to stand up this command. Furthermore, COMNAVDOCCOM is an echelon two commander. The other services' doctrine commands are divisions within a larger command.

The idea of a Naval Doctrine Command is outside the typical Navy thinking:

> For decades, the Navy has focused on tactics, techniques, and procedures. Doctrine that integrates all services into a cohesive force for power projection from sea to shore, is both radical and challenging. (Heim, 1992, p. 26)

So even though "...From the Sea" lacks the details of its own implementation, it establishes the framework, through the Naval Doctrine Command, by which that implementation can be accomplished.

D. JOINT MISSION ASSESSMENT PROCESS

1. Background

"...From the Sea" was not the only manifestation of change in response to the changing environment. The entire U.S. Navy organization, particularly OPNAV, was changing, and recognizing the need for that change, as well.

Commander Starr King (N-812C4) is the source for that which follows. Independent of, but simultaneous to, the NFCPE, efforts were underway to examine the headquarters organization throughout the Navy, at every level: from OPNAV to the Fleet CINC's to the Type Commanders. At the time, the Navy was under a legislative mandate to cut vice and rear admiral billets. Additionally, the headquarters staff at OPNAV recognized that it could be made much better.

In accordance with the Navy Total Quality Leadership (TQL) process, a Process Action Team (PAT) was established to study and recommend alternatives for reorganizing OPNAV. The PAT's recommended reshuffling of OPNAV to match the Joint Staff had wide implications, two of which will be discussed here.

First of all, a brand new N-6 was established: DCNO, Space and C4 System Requirements. Such a dramatic shift in organization, and hence emphasis and focus, demonstrates the Navy's new perception of C3's importance relative to the traditional interest areas.

Secondly, OP-07 was eliminated entirely. OP-07 had been charged with notionally analyzing the Navy's budget, which was divided between warfare (1/3) and support (2/3). OP-07 had provided appraisals along functional lines, for example, ASW, AAW, and EW.

That appraisal process had to be incorporated into the new organization which deleted the old OP-07. That functionality--appraising--was strengthened and has become the assessment process to be conducted within N-8.

The new naval organization was officially announced in August 1992[1]. Shortly thereafter, a seminal event occurred: the SECNAV's strategy POM wargame at Newport.

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[1]It became effective at the beginning of fiscal year 1993.

Here, high-level naval personnel discussed issues, including the POM 94-95 budget estimates, in an open and unconstrained environment. They "tested the logic of the draft strategy paper ["...From the Sea"] against the budget." (Rainbow and Miller, 1993, p. 73)

Although "...From the Sea" had not yet been published, it was about to be. The new naval organization was discussed in the context of "...From the Sea," and the two--the new OPNAV organization and the White Paper--jelled. There were no arguments about the importance of C2/C3/C4I. As a result of that wargame, hundreds of millions of dollars were moved into C4I programs due to the demonstrated "high payoff for C3 spending.[2]" (Vice Admiral William Owens quoted in Munroe, 1993, p. 21) Furthermore, C4I underlay and continues to underlie the entire Joint Mission Assessment Process.

In fact, when the budget cuts were announced with the new administration, large force reductions occurred, yet C3/C4I was fenced, and "plus ups" actually occurred in some areas, with more expected. The value of C2 and surveillance

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[2]In 1993, 16.7 billion dollars were appropriated for C3. 16 billion dollars have been requested for the 1994 C3 budget: $4 billion for procurement; $3.2 billion for C3 research and development (down $300 million); $5.3 billion for C3 operations and maintenance; and $3.5 billion for personnel (down $400 million, reflecting reduction in U.S. troop levels).

is not lost on those who make recommendations where cuts should occur; that is, those who participate in the Joint Mission Assessment Process (JMAP).

2. Analysis

Precisely how "...From the Sea" impacted the JMAP is demonstrated in the following:

> Reshaping the combat capabilities of the Navy and Marine Corps for the regionally-focused littoral operations described in "...From the Sea" is the challenge for the start of the 1990s. The Chief of Naval Operations (CNO) has initiated an assessment process to examine the Department of the Navy (DON) program in the light of new naval strategies. This new assessment process began in October of 1992, in step with the staff reorganization. (N-8 Supporting Paper, 1993, p. 1)

The JMAP organization is illustrated in Figure 3.

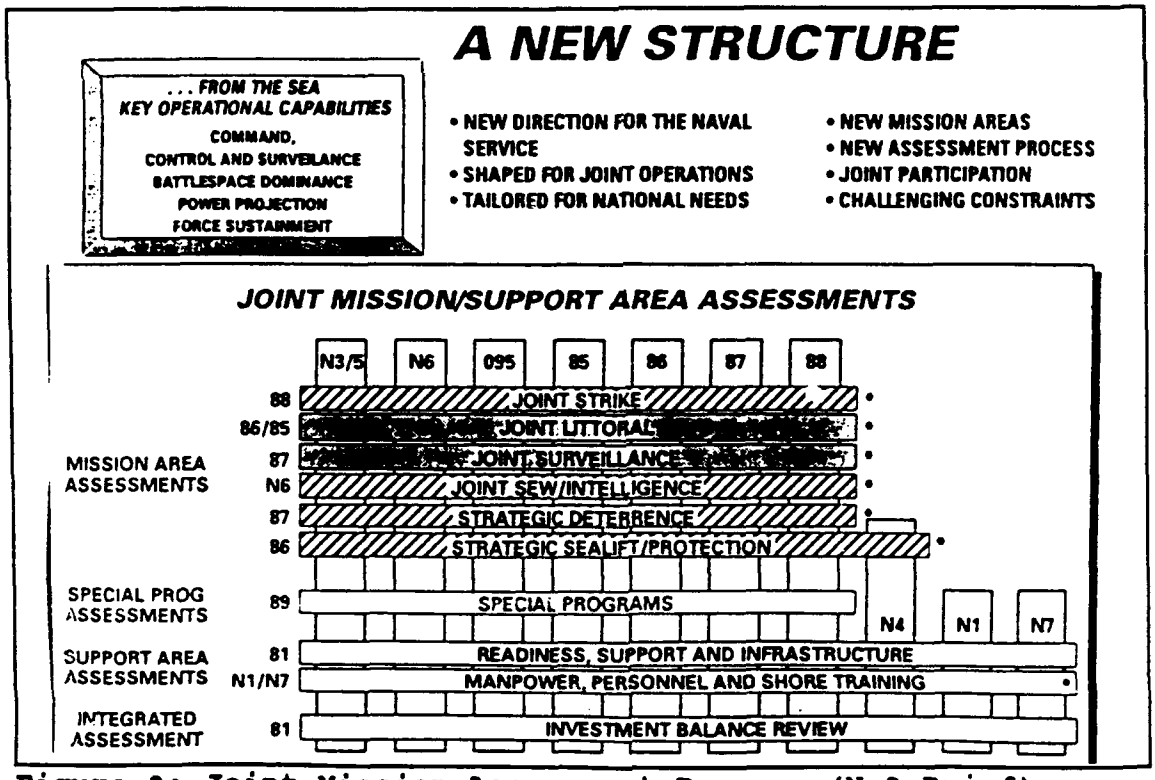

Figure 3: Joint Mission Assessment Process (N-8 Brief)

The JMAP consists of nine different assessments: six joint mission area assessments, or JMA's (joint strike, joint littoral warfare, joint surveillance, joint sew/intelligence, strategic deterrence, and strategic sealift/protection); two support area assessments, or SA's (readiness, support and infrastructure and manpower, personnel and shore training); and one special programs assessment[3].

> The JMAs and SAs are an assessment tool, not a foundation for warfare doctrine. Naval forces will continue to conduct fundamental naval warfare tasks such as strike warfare, antiair warfare, antisurface warfare, and antisubmarine warfare. Naval forces will, however, need to apply these warfare tasks in an increasingly complicated littoral operational environment. (N-8 Supporting Paper, 1993, p. 1)

Even though "...From the Sea" and the JMAP evolved separately, the two are closely tied to one another. The JMAP continues to incorporate the new concepts presented in "...From the Sea," since one of the inputs for making an assessment is the Navy strategy and goals, as articulated in "... From the Sea."

Unfortunately, the White Paper's impact on the assessment process is diminished due to its general nature which lacks specificity. The message of "...From the Sea"--

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[3]It is noteworthy that the JMAP definitions of joint strike, joint littoral warfare, joint surveillance, and joint sew/intelligence each include both the words "joint" and "combined."

a revised mission in a new world order--is of course not lost and is most certainly of utmost consideration in the assessment process. However, in the author's view, "...From the Sea" has no binding "rules" or "contracts" which might better shape the assessment process. Without the "meat," "...From the Sea" is flexible and can thus be applied with great flexibility. There are no specific limiting factors in "...From the Sea" which must be considered in the assessment process. However, the overall concept, a smaller Navy with a smaller mission, is taken into account in the assessment process. This thesis concludes that one of the strengths, as well as potential weaknesses of the White Paper is its lack of a binding construct for the joint mission assessment process.

E. JOINT MISSION ASSESSMENT AREA: JOINT LITTORAL WARFARE

Of all the assessment areas, joint littoral warfare is the one most closely tied to "...From the Sea," since the underlying "theme" in the White Paper is this new warfighting environment. The impetus for the White Paper was this "newly defined regional, littoral naval focus."

But a regional, littoral naval focus is not new. It was for just that regional, littoral focus that the Navy and Marine Corps were originally established. In effect, "...From the Sea" directs the Navy and Marine Corps both

into the future, and, ironically, back into the more distant past. It sets an exciting course for the Navy/Marine Corps that is very similar to that course set on 30 April, 1798, when the office of SECNAV and the Marine Corps were established. (Green, 1925, p. 131)

These are the expeditionary roots referred to in the opening quote: the Navy and Marine Corps going to sea as a single unit, with separation being necessary only due to the differences in the training required by each.

In recent years of emphasis on blue water operations, the Navy/Marine Corps team drifted apart. The Navy viewed itself as primarily an open ocean force, and the Marines were considered their own separate land force; amphibious forces were not considered "mainstream" naval capabilities. The two were tied together more administratively than operationally.

Now we are returning to the days when littoral conflicts are important--back to the days of the Barbary Pirates. These are our expeditionary roots. It is ironic that these expeditionary forces were formed to contend with a hostile Arab nation. In this sense perhaps history does in fact repeat itself.

F. "...FROM THE SEA" AND ITS IMPACT ON NAVY C3

As stated earlier in the discussion about power projection, Command, Control, and Surveillance is a key operational capability discussed in "... From the Sea." Just as "...From the Sea" falls short with respect to implementation, it falls short here too. Actually, that which is implicit is more important than that which is explicitly stated regarding Navy C2. The explicit discussion of C2 in the White Paper will be examined first. Its implicit ramifications will then be reviewed.

1. Explicit C2

Command, Control, and Surveillance are covered in eight sentences in the White Paper; half are dedicated to C2 and half are dedicated to surveillance. No revolutionary ideas are presented:

> The Navy and Marine Corps will continue to structure command and control capabilities to promote efficient joint and combined operations as part of an overarching command, control, and communications architecture that can adapt from sea to shore. We will also exploit the unique contributions which Naval Forces bring to littoral operations. (O'Keefe et al, 1992, p. 95)

Somewhat troublesome is the use of the word "continue" in the first sentence. In the past, the Navy's and Marine Corps' C2 capabilities have been less than stellar--much less. However, what is promising in the above is the

emphasis on joint and combined operations. Here is where the implicit impact of the White Paper on Navy C2/C3 manifests itself.

2. Implicit C2

Running throughout "...From the Sea" is the idea of the Navy and Marine Corps team being first on scene and providing the initial, "enabling" capability for joint operations, and possibly combined operations, in conflict. As such, it is imperative that the Navy/Marine Corps team possess adequate C3 as a key prerequisite to "enable." Furthermore, to be able to "command a joint task force and function as, or host, a Joint Force Commander," C3 is a must. So perhaps what the White Paper does not say outright is more important than what it does say with regard to Navy C3.

G. "...FROM THE SEA" AND ITS IMPACT ON COALITION OPERATIONS

"...From the Sea" recognizes the inevitability of smaller U.S. naval forces in the future. By assuming no open-ocean threat to sea control, mission realignment--shifting to a littoral vice blue water focus--is one way "...From the Sea" proposes to overcome the gap in forces. While not a panacea, another, much more subtle "fix" put forth in the White Paper is for naval forces to operate as part of a coalition. However, unlike joint operations,

combined/coalition operations are not emphasized in "...From the Sea"; they are merely mentioned in passing. The White Paper does not outline the "how to's" of coalition building; rather, it assumes allied cooperation in coalition scenarios. It assumes to be true things which are not necessarily so, e.g., a viable coalition. Without continual interaction with potential coalition partners in the form of combined exercises, allied cooperation and coalition viability cannot be presumed. "...From the Sea" fails to draw linkage between what is assumed and what is true; it does not recognize the vital contribution of combined exercises to viable coalition forces. It takes for granted a workable coalition.

One exception, where coalition/combined <u>assets</u> are specifically addressed, is in the area of surveillance and battlespace dominance:

> Integrated information and netted sensors will allow us to use surveillance data from *all* sources--national and combined.... We must use the full range of U.S., coalition, and space-based assets to achieve dominance in space as well. (O'Keefe et al., 1992, p. 95)

As was the case with Navy C3 mentioned above, with regard to coalition operations, perhaps what is not said explicitly is more important than that which is. For example, "...From the Sea" dictates that Commander U.S. Naval Forces Central Command is made a three-star vice two-

star billet.[4] The real benefit of this action is not articulated in the White Paper. However, according to Vice Admiral Leighton Smith, Deputy Chief of Naval Operations, Plans, Policy and Operations (N3/N5), the creation of this new billet "enhances the commander's ability to conduct exercises and develop coalitions." (Morton, 1993, p. 118)

Another example of the White Paper's implicit impact on coalition operations is manifested in the area of mine warfare. Traditionally a U.S. weakness and an allied forces' strength, mine warfare is conspicuously absent from any formal discussion in "... From the Sea." Yet it is unquestionably a priority and a necessary function in littoral operations--the overarching context of naval operations in "... From the Sea."

In spite of its inherent impact in any littoral setting, mine warfare is not treated as a relevant issue worth addressing:

> Focusing on the littoral area, the Navy and Marine Corps can seize and defend an adversary's port, naval base, or coastal air base.... (O'Keefe et. al., 1992, p. 94)

No mention is made here of the mine threat. One need only look as far as Desert Storm to realize the deterrent effect mines can have on seizing any port and the U.S.'s inability

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[4]This requirement became a reality in October 1992 when vice Admiral Douglas Katz relieved Rear Admiral R. A. K. Taylor. (Morton, 1993, p. 117)

to overcome that mine threat alone. The White Paper later concedes that

> Some littoral threats--specifically mines...tax the capabilities of our current systems and force structure. Mastery of the littoral should not be presumed. (O'Keefe et al., 1992, p. 94)

"...From the Sea" presumes exactly that (mastery of the littoral) when it simply states "... the Navy and Marine Corps can seize and defend an adversary's port...."

Further, in its discussion on the tailoring of naval forces, the White Paper provides alternatives to the traditional carrier battle group and includes as an example "a group of minesweepers, with several guided-missile frigates for defense." Although the U.S. Navy possesses both frigates and minesweepers, it would greatly benefit from augmentation by allies, some of whom have a distinct competence in mine warfare, as demonstrated during the Gulf War. In any littoral crisis situation, U.S. naval forces would most likely rely on coalition support for those assets.

In both cases above, allied support and cooperation are necessary to realize success. "...From the Sea" does not distinctly outline how this cooperation will occur. It just presumes that it will. The White Paper considers coalition operations to be basically a given--an inherently necessary outcome, or result, of world-wide military downsizing.

H. "...FROM THE SEA" AND ITS IMPACT ON NAVY FORCE SIZING

In this era of world-wide military downsizing, the U.S. is not exempt. U.S. forces across the board have been targeted for downsizing out of fiscal necessity. Several sizing methodologies--from the Bush administration's "Base Force" concept (of 450 ships) to former chairman of the House Armed Services Committee Les Aspin's options A through D--have been considered. Aspin's option C, resulting in a total of 340 ships, including 50 amphibious ships, has been endorsed by Congress and appears to be the "winner." However, budget cuts may further shrink the total number of ships to less than 320 by the end of the decade (Morrocco, 1993, p. 21).

Aspin's Navy force sizing methodology is a threat-based or contingency-response-based approach. Ronald O'Rourke, Specialist in National Defense, Congressional Research Service (CRS), offers another approach: a forward-deployments-based approach, in which force size is based on how large a force would be needed to maintain a desired level of day-to-day overseas forward deployments. (O'Rourke, 1992, p. CRS-2) He maintains that it is possible to conclude that "a Navy large enough to participate in regional wars may not be large enough to maintain desired levels of day-to-day forward deployments." (O'Rourke, 1992, p. CRS-2) In other words, with reduced naval forces--from a

high of 565 ships to a low of 320 ships--forward deployments at the traditional level simply may not be feasible.

The resultant decrease in forward deployments results in subsequent decline of combined exercises. Yet it is on these very combined forces which a smaller U.S. naval force depends. The smaller the U.S. Navy, the greater is its dependence on allies and coalition partners to help attain the objectives stated in "... From the Sea." However, as will be demonstrated in Chapter IV, forward deployments are crucial to effective combined/coalition operations. Thus, a difficult dilemma pervades the sizing process, regardless of the method chosen to determine U.S. naval force size.

"...From the Sea" does not address the question as to how the naval forces will or should be sized. It merely acknowledges that both missions--forward deployments/presence and contingency response--are important; they are both cited as roles for U.S. naval forces:

> These maritime capabilities are particularly well tailored for the forward presence and crisis response missions articulated in the President's National Security Strategy. (O'Keefe et al., 1992, p. 94)

As already mentioned, these two primary missions--forward deployments/presence and crisis response--do not necessarily require the same force size. That is not to say that the

two are mutually exclusive; rather, they are simply not the same and thus most likely require different sized forces.

In fact, Dr. James L. George, a Senior Adjunct Fellow with the Hudson Institute, asserts that the size difference is quite substantial:

> It is the difference, for example, between rather easily justifying the 12 carrier battle groups needed to fill the *complete* forward-presence and crisis-response role, or only six for the occasional littoral conflict. (George, 1993, p. 71)

He further goes on to say

> It is the difference between requiring many surface combatants for both naval *and* national forward presence, or only a few to, again, protect the occasional littoral exercises. It is the difference between requiring a 450-ship fleet that reflects the Navy's increasingly predominant role in all mission areas, or a 250-ship joint fleet....(George, 1993, p. 71)

His major argument, which is more fully discussed in Chapter VII, is that the Navy must look beyond the littoral as its only operational environment and role:

> While the Air Force is focusing on "Global Reach-Global Power," the latest Navy white paper, "...From the Sea," focuses on the exceedingly narrow *littoral* band, ignoring the trends that point to increased naval predominance in all *broad* areas of national security. (George, 1993, p.67)

Perhaps budget constraints allow for no more than a littoral focus; hence, "...From the Sea" is indeed the politically correct response. Nonetheless, a recognition of the Navy's ability to accomplish broader missions is warranted and

should not be down played or de-emphasized to the point that it is forgotten. This argument is expanded in Chapter VII.

Ultimately, the method--both of which have merit--which is chosen to size the Navy, in calculating that size, will directly determine the degree of dependence on allies: the smaller the force, the larger the reliance that will be placed on coalition scenarios and combined operations, which rely on effective combined C3 capabilities.

I. "...FROM THE SEA" AND ITS IMPACT ON AMPHIBIOUS FORCES

1. Overview

The White Paper emphasizes littoral/expeditionary warfare and maneuver from the sea. The obvious winner among surface forces in such an arena is the amphibious forces:

> Amphibious forces bring a unique advantage to littoral warfare--they can transition quickly and smoothly from forward-presence operations to crisis response and power projection or to humanitarian assistance and peace keeping. (LaPlante, 1993, p. 49)

This flexibility of amphibious forces is not lost on commanders-in-chief and Congress:

> ... while the total number of amphibious ships will go down with the rest of the force, the percentage of the force that is amphibious will increase." (LaPlante, 1993, p. 49)

A quick review of recent naval forces' employment (Desert Shield/Storm, Provide Comfort, Provide Promise, Sharp Edge, Eastern Exit, Sea Angel, Fiery Vigil, Gitmo, Restore Hope, and Able Manner) reveals that "amphibious

forces were an irreplaceable part of each one." (LaPlante, 1993, p. 49) Amphibious forces, without a doubt, are "coming into their own." Their time has come.

2. Amphibious Forces and Navy C3

Due to Navy communications shortfalls highlighted during the Gulf War, many older amphibious ships are currently being retrofitted with improved communications and C3I facilities. The newest class of amphibious assault ships, the *Wasp* (LHD-1) class, has the "largest integrated communications facilities [ICS-4] afloat." (Slade, 1992, p. 17) With these upgrades and extensive communications capabilities, large amphibious ships could easily become the center of a battlegroup in an adaptive force package scenario. As demonstrated above, the amphibious navy has been significantly strengthened by "...From the Sea" and will be an important part, if not the most important part, of any battlegroup.

In order to fully appreciate naval amphibious forces' potential contribution to Navy C3, one must accept or believe that future crises, by their very nature, will happen unexpectedly. Further, fixed communication systems will not necessarily be in place when crises do erupt. However, the need for communications will be great.

With regard to communications, U.S. forces were fortunate in Desert Storm for three reasons. First, they

had six months in which to build up their communications infrastructure. Second, there was already a substantial U.S.-compatible military infrastructure in place. Finally, satellite ground stations, on which satellite use is predicated, were left untouched; future foes will most likely attack or at least interfere with these vulnerable stations, severely hampering allied C3 capabilities.

In light of the above three Gulf War anomalies, shipboard C3 might very well be the only C3 option available in a contingency situation:

> It may well be that the first secure, high-capacity and sophisticated communications networks available at the scene of a crisis will be aboard the first warships to arrive. (Slade, 1992, p. 21)

Along with being the first on scene, navy ships have other advantages. Their compact, concentrated C3I resources are readily available, manned, mobile, well defended, and, some may claim, virtually transparent, given their location aboard a relatively small moving platform in a relatively large body of water. Besides, in a contingency situation, a naval battlegroup may be the only option available and on-scene to establish the initial vital C3.

J. CONCLUDING REMARKS

Fiscal realities and the new world order have necessitated a change in direction for the U.S. and the entire U.S. military. The Navy and Marine Corps have

responded with the White Paper, as well as a completely new organization and joint mission assessment process. "...From the Sea" "represents a fundamental shift away from open-ocean warfighting *on* the sea toward joint operations conducted *from* the sea." This new focus dramatically impacts several key areas, including Navy C3, combined/coalition operations, Navy force sizing, and U.S. amphibious forces.

In its full embracement of jointness, The White Paper proclaims the U.S. Navy to be less of a separate entity than it traditionally has been. However, in terms of physical capabilities, it can still do things as a naval force that is designed to transition seamlessly into a joint force when non-naval forces become available for employment in any given scenario.

As overseas bases continue to close[5], and as access to them continues to decline, the importance of naval forces' presence increases. "Naval forces can maintain a forward-deployed U.S. military presence in regions where U.S. access to overseas bases is lacking." (O'Rourke, 1992, p. CRS-39)

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[5]Since 1990, announced closures of overseas installations total 704, with nearly 200,000 personnel. (Auster et. al, 1993, p. 25) Some experts aver that U.S. Army and Air Force overseas bases and hence their forward presence will be "completely eliminated by the turn of the century"; in short, "in a very few years, forward presence could well be only naval forces." (George, 1993, p. 69)

It is this mobility and freedom of action which enable naval forces to rapidly respond, be the first on scene, and establish initial C3 in a contingency. As stated in the White Paper, "Maneuver from the sea...provides a potent warfighting tool to the Joint Task Force Commander--a tool that is literally the key to success in many likely contingency scenarios." (O'Keefe et. al., 1992, p. 95)

III. MODEL ANALYSIS

A. INTRODUCTION

Modeling and wargaming are popular methods used by modelers/war gamers to help them better understand that which the model/war game is attempting to represent. Although more often associated with mathematicians and operations researchers and analysts, models are also utilized by political scientists. When investigating the abstract idea of relationship building and cooperation between nations, the political science viewpoint is the more appropriate perspective in which to view this difficult, ethereal issue.

B. PRISONER'S DILEMMA

Robert Axelrod, esteemed Professor of Political Science and Public Policy at the University of Michigan, wrote what some regard as a "pathbreaking and provocative" (Axelrod, 1984, cover jacket comments) book: *The Evolution of Cooperation*. In this "truly original book that sheds new light on some very old questions," (Axelrod, 1984, cover jacket comments) Axelrod attempts to develop "a theory of cooperation that can be used to discover what is necessary for cooperation to emerge." (Axelrod, 1984, p. 6)

To study this cooperation phenomenon wherein no central authority exists to mandate it, Axelrod employs the Prisoner's Dilemma game. In this somewhat simple game, there are two players with two choices: to cooperate or defect. Neither player knows what the other will do. Regardless of the action of the other player, defection yields a higher payoff than cooperation; however, if both defect, both players will do worse than if they had both cooperated. Hence the dilemma. (Axelrod, 1984, pp. 7-8) Figure 4 graphically summarizes the game.

		COLUMN PLAYER	
		Cooperate	***Defect***
ROW PLAYER	**Cooperate**	R = 3, R = 3 Reward for Mutual Cooperation	S = 0, T = 5 Sucker's Payoff, and Temptation to Defect
	Defect	T = 5, S = 0 Temptation to Defect, and Sucker's Payoff	P = 1, P = 1 Punishment for Mutual Defection

Figure 4: The Prisoner's Dilemma (Source: Axelrod, 1984, p. 8)

Axelrod goes on to demonstrate that since it apparently pays to defect, without prior knowledge of mutually affected game outcomes, both players will defect. Thus, "individual

rationality leads to a worse outcome for both than is possible [had both cooperated]." (Axelrod, 1984, p. 9) However, when the game is played an indefinite number of times, cooperation will emerge. (Axelrod, 1984, p. 11) It is on this key factor, the "shadow of the future" as he calls it, that the bulk of his theory on cooperation is based.

He applies a simple strategy, or decision rule, to the Prisoner's Dilemma game: Tit for Tat. Tit for Tat, as the name implies, is the policy of cooperating on the first move and subsequently doing whatever the other player did on the previous move. (Axelrod, 1984, p. 20) Key to Axelrod's analysis is reciprocity and future meetings between players:

> The evolution of cooperation requires that individuals have a sufficiently large chance to meet again so that they have a stake in their future interaction. If this is true, cooperation can evolve.... (Axelrod, 1984, p. 36)

Axelrod provides several involved proofs of his theoretical propositions. Despite these extensive proofs, Axelrod's theory on cooperation falls short in the realm of military applications. His theory can more readily be applied to economics, international relations, and politics. It is quite easy to see how his theories pertain to, for instance, tariffs and trade. If one country insists on protectionism, a natural retaliatory response for the affected country or countries is to do likewise.

His theory works where there is bargaining involved, such as in an arms control or disarmament treaty. In this case, the treaty itself can be broken down into several stages, allowing the negotiators to make many small moves and concessions rather than one major move. "Doing it this way makes reciprocity more effective." (Axelrod, 1984, p. 132)

He also quite readily relates his theory to Congress, business, and biological systems. Here, reciprocity and future encounters are guaranteed and expected.

Can this same theory be applied to warfare? Axelrod's use of a warfare example implies that it can be. Axelrod utilizes an historic example of the live-and-let-live system in trench warfare in World War I to illustrate his idea of the importance of reciprocity and the shadow of the future on cooperation between enemy soldiers. In this case, cooperation emerged between foes because of the static nature of warfare and the long duration of contact between small units facing each other. Here was the prime example of Tit for Tat. As one historian states, "To provide discomfort for the other is but a roundabout way of providing it for themselves." (Sorley in Axelrod, 1984, p. 84) Axelrod refers to this understanding as the echo principle.

Axelrod's point in using the trench warfare example is to demonstrate that friendship is not "necessary for cooperation [be it in a unit's own best interest or otherwise] based upon reciprocity to get started. Under suitable circumstances, cooperation can develop even between antagonists." (Axelrod, 1984, p. 87) Key to his notion is the idea of reciprocity.

In the present military arena, there most likely will not be an opportunity in the future for the same type of meeting under the same conditions with the exact same people as was the case in the static trench warfare example. Hence, there is not the same opportunity for Tit for Tat to emerge. Furthermore, cooperation between enemies is not the proper context for cooperation in coalition operations. The type of cooperation fundamental to a coalition scenario revolves around relationship building and providing services because of that positive relationship vice negative relationship based on threat.

Finally, the two-player game is an unrealistic model for cooperation among coalition partners. Some sort of *n*-player game would be more appropriate; but by Axelrod's own admission, the *n*-player case is qualitatively different, mainly due to diffusion and synergism. (Axelrod, 1984, p. 221)

This is not to discount Axelrod's work. In fact, he never meant it to apply specifically to navy coalition cooperation. His perspective is more in "the arena of international relations, where independent, egoistic nations face each other in a state of near anarchy." (Axelrod, 1984, p. 190) ("Anarchy" here merely means without a central authority to force cooperation.) Examples of problems which he states take the form of an iterated Prisoner's Dilemma include arms races, nuclear proliferation, crisis bargaining, and military escalation. (Axelrod, 1984, p. 190)

He concludes that the advice to players of Prisoner's Dilemma might be good advice for national leaders: don't be envious or the first to defect; reciprocate both cooperation and defection; don't be too clever; and, basically, be nice. (Axelrod, 1984, p. 190) His thesis is that if we understand the process of mutually rewarding strategies based upon reciprocity, we can "speed up the evolution of cooperation." (Axelrod, 1984, p. 191)

Even though Axelrod's game cannot be directly employed in the study of cooperation between navies, several of his premises, though rather obvious, are quite apropos. His assertion that "frequent interactions help promote stable cooperation" (Axelrod, 1984, p. 130) concisely states the thrust of this thesis. He further states that "the key to

doing well lies not in overcoming others, but in eliciting their cooperation." (Axelrod, 1984, p. 190)

Other than these general statements, very little if any of Axelrod's other analysis can be applied to coalition-specific cooperation. Thus, Axelrod has limited applicability despite his billing. Further modeling explanations are required.

C. COHESION

In the military realm, "cohesion" is normally accompanied by the word "unit," as in "unit cohesion"; that is, cohesion with regard to a specific unit. It is unit dependent. It is not actually applicable to a multitude of units/forces, but, rather, to a single unit/force, whether it be within a nation's army, navy, air force, or marines.

Factors identified that are elemental to cohesion, or esprit, include leadership, training, personnel stability (as evidenced by the Army's COHORT program, discussed below), command stabilization, and Pentagon policies. (Defense Management Study Group on Military Cohesion, 1984, p. 94) Clearly, these are unit/force-specific factors.

In the U.S., the focus on and study of cohesion has been greatest in the Army, with its COHORT (Cohesion, Operations Readiness, and Training) program. Designed to build cohesion in units, COHORT is a unit vice individual

personnel movement system. In other words, whole units are rotated in toto with other COHORT units; the job changes, but the people remain the same.

Results of the COHORT program have been promising; however, the system has begun to weaken as the Army tries to balance the needs of individual career progression and individual needs with unit cohesion. (Straub, 1988, p. 24)

Most studies on cohesion base their analysis on the results of surveys given to officers and enlisted members. These surveys measure member satisfaction with his/her particular unit, and, more broadly, his/her military service. Survey results are analyzed to determine unit cohesion, and, fundamentally, unit morale. Unit morale, however, cannot be measured in coalition organizations. Interaction between coalition partners is fundamentally different from interaction between unit personnel.

Within units, comradeship is key to cohesion. Perhaps the best example of strong comradeship and consequently strong unit cohesion is within the extremely effective

Israel Army, where the principles of COHORT[1] are successfully employed:

> The decisive role of social ties and comradeship in the Six-Day War has been sufficiently established by conversations with returning soldiers. On numerous occasions soldiers were asked what sustained them in moments of dire peril, and what had driven them on. Only an insignificant minority gave hatred for the Arab as a motivating factor. Most...stressed the need to fulfill their obligation toward their fellow soldiers....In interviews with wounded soldiers... the word *ha-herrah* (my buddies) is mentioned with monotonous frequency. (Rolbant, 1970, p. 161)

This type of comradeship and hence cohesion will most probably always remain elusive in a multinational operation. This cohesiveness can be hoped for, but it will probably never be attained. Indeed, such comradeship should not be the goal in a coalition force; the goal should be relationship building and trust rather than the more intimate comradeship possible within a single unit. Thus, modeling cohesion also falls short in the coalition context.

D. VIRTUAL REALITY--VIRTUAL COALITION?[2]

A model which holds exceptional promise for simulating coalition operations is distributed simulation, also known

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[1]Members are rotated in and out of combat as a unit and can expect to stay in their same unit for their entire time in service. (Henderson, 1985, p. 54)

[2]The information which follows was drawn from a Defense Advanced Research Projects Agency (DARPA) video report entitled *Simulation Insights*, 18 May, 1992.

as distributed interactive simulation, virtual world, virtual reality simulation, synthetic environment, artificial reality, and virtual battlefield.

1. Background

Since the mid-1980's, the U.S. Navy has connected ships in port to pierside simulators for training. This program, known as Battle Force in Port Training (BFIT), was expanded substantially in April of 1990 by connecting BFIT assets to a nationwide simulation network where sailors, soldiers, pilots, and Marines could "fight" together in a large scale, virtual world.[3] This exercise was the BFIT Proof of Principle Demonstration.

The exercise demonstrated that remote sites could be connected using a global grid. In the synthetic environment, players interacted, worked together, made decisions, and solved problems. The implications go beyond training and operations: they include force modernization, force concept exploration, force requirement definition, acquisition prototyping, virtual manufacturing, and

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[3]Actual "players" included Fleet Combat Training Center, Atlantic (with a naval gunnery training system and the Aegis Training Center) and *USS Wasp*, in port, both in Norfolk, Virginia; Marine helicopter pilots in Fort Rucker, Alabama; Marine tank drivers in Fort Knox, Kentucky; a node in Cambridge, Massachusetts; and a observation node in Washington D.C. All came together on the Fort Hunter-Ligget, California terrain data base. Connectivity was accomplished between these disparate and distant units in the distributed network simulation.

equipment test and evaluation. But most importantly, this type of simulation contributes to operational readiness:

> Simulation is fundamental to readiness for war. We cannot, today, bring about combat readiness without some recourse to simulation. (Gorman, in testimony before the Senate Armed Services Committee Hearing on Advanced Modeling and Simulation, 21 May, 1992)

Those who participated in the BFIT Proof of Principle Demonstration were extremely impressed with the "reality" of the distributed simulation. It appears a fundamentally new and exciting defense capability which is just beginning to be exploited.

2. Virtual Reality in Coalition Scenarios

In spite of its obvious utility, long-term money-saving benefits, and multiple world-wide military applications, this "near reality" distributed simulation is not expected to be extended to prospective coalition partners or even to NATO allies in the near future. (Brockett, 1993) Perhaps the area is too new; perhaps the need is not deemed to be great enough. Whatever the case, distributed simulation might be a viable alternative to actual combined exercises at sea. It is these very exercises which the author asserts may become vital to Navy C3 in the new coalition environment. With allied defense budgets becoming increasingly smaller, policymakers might be wise to examine expanded distributed simulation as an alternative or augmentation to combined exercises.

Until distributed network simulation is extended to allies, the U.S. Navy must continue to rely on forward deployments and combined exercises to maintain both proficiency with allies and a credible coalition force.

E. MEASURES OF EFFECTIVENESS (MOE's)

Just as a model for forward deployments and combined exercises is elusive, so are definite, quantifiable MOE's. Ronald O'Rourke, already cited in the previous chapter, offers both operational and political/psychological benefits from which MOE's might be drawn. In all cases, however, quantification is difficult, if not impossible:

> While it is relatively easy to determine the forces necessary to defeat an enemy at sea or in a campaign such as Desert Storm, it is extremely difficult to determine the force level required for a peacetime forward military presence. The measures of effectiveness are not well defined.... Forward military presence in peacetime is similar to deterrence in concept. In both cases it is difficult to determine precisely "how much is enough." The consequences of inadequate force are only revealed in failure. (Pendley, 1992, p. 12)

To measure the effectiveness of, i.e., formulate MOE's for, naval forward presence is key to its sustained continuance. However, real quantifiable measures have yet to be developed. In the interim, more generalized "benefits" such as those specified by Mr. O'Rourke will have to suffice.

1. Operational Benefits

He lists such operational benefits as rapid response, collecting on-scene intelligence, understanding

local operating conditions, and improving training and interoperability with allied and friendly forces. (O'Rourke, 1992, p. CRS-34) Each of these benefits will be briefly discussed here.

a. Rapid Response

The overwhelming benefit here is that when a small force responds early to a crisis, it can "sometimes accomplish much more than a significantly larger force that responds later." (O'Rourke, 1992, p. CRS-36) Another way of looking at the rapid response benefit is to determine the cost of not being forward. For example, a crisis response takes *n* days (from a forward deployed force) versus *n* plus *y* days (from a U.S. based force). What was the cost of the *y* days? Did the crisis become *x* amount larger? Did the enemy invade or build up defenses against a landing area in those *y* days? How critical are those *y* days? There is no easy formula; there is no easy answer.

b. Intelligence and Surveillance

Forward deployed naval forces can be used as local intelligence and surveillance platforms and can warn of an impending crisis. They are not subject to the same constraints--weather, clouds, proper angle, overhead time, predictability--to which satellites are. Further, they can provide information on enemy strategy and tactics which a satellite might not be able to see. Their presence is both

continuous and unpredictable, making them more difficult to evade. (O'Rourke, 1992, p. CRS-36)

c. Familiarization with Potential Conflict Zones

Forward deployed naval forces can become familiar with operating in the unique environmental conditions[4] of regions where U.S. forces might be engaged in the future. During Operation Desert Shield/Storm, the U.S. Navy, by virtue of having maintained a naval presence in the Gulf for more than 40 years, "was familiar with the potentially difficult operating conditions of the Persian Gulf...." (O'Rourke, 1992, p. CRS-37)

d. Training with Allied/Friendly Forces; Interoperability

Allied/friendly forces do not currently come to the U.S. to train. Instead, U.S. forces deploy to train and improve interoperability[5] with foreign forces. Again, translating combined exercises into improvements in interoperabilty between allied/friendly forces is difficult and cannot be done numerically. However, the importance of

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[4]Environmental conditions can affect both sonar (water temperature and salinity, eddies, currents, depth, and bottom composition) and radar (air temperature, humidity, precipitation, and airborne particles). (O'Rourke, 1992, p. CRS-37)

[5]Interoperability here refers to the "ability to operate together in a coordinated fashion in spite of differences in equipment, operational traditions, and native languages." (O'Rourke, 1992, p. CRS-38)

these exercises with other nation's navies cannot be overemphasized and is the subject of Chapter IV.

2. Political/Psychological Benefits

Even more difficult to quantify than operational benefits are the political/psychological benefits of forward deployments. Mr. O'Rourke discusses how forward deployed U.S. naval forces affect the "thinking and behavior of foreign political and military leaders" and how these effects constitute the "presence" value of those forward deployed forces. (O'Rourke, 1992, p. CRS-38) He lists the political/psychological effects of forward deployed naval forces as helping to

> ...demonstrate U.S. resolve and commitment to that region; deter potential regional aggressors; reassure regional allies/friends; and encourage regional neutrals to become friends or discourage them from allying themselves with potential U.S. adversaries. (O'Rourke, 1992, p. CRS-38)

By generating these effects, forward deployed naval forces can help

> ...contain crises and prevent them from becoming conflicts; discourage countries from aspiring to the role of regional hegemon; maintain stable regional environments within which peaceful change can be promoted; build coalitions of friendly countries that can help maintain regional stability and cooperate with the United States if conflicts do occur; avoid power vacuums that would encourage regional arms races; reinforce specific U.S. or multilateral diplomatic initiatives; and promote U.S. economic interests by maintaining access to overseas markets and encouraging transition to open-market economic systems. (O'Rourke, 1992, p. CRS-39)

None of the above can be measured, and thus the argument for them is most unfortunately diminished. Mr. O'Rourke further discusses the difficulty in proving a negative: that forward deployments "kept something from happening." (O'Rourke, 1992, p. CRS-42) Data on such non-events does not exist. Even if it did exist, it would be controversial and subject to different interpretations.

Causality between forward deployments/combined exercises and their associated benefits is elusive if not impossible to demonstrate. Because policymakers think more and more in terms of numbers and formulas, it would behoove the Navy to develop an agreed methodology to be used to translate forward deployment/presence benefits into forward deployment/presence MOE's[6].

Where does Navy C3 fit in? Perhaps measurements of coalition C3 connectivity could be taken at the beginning of a combined exercise, throughout the exercise, and at the completion of the exercise. By tracking C3 trends over time, the improvements realized might make a sound, convincing case in support of naval forward deployments and combined exercises.

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[6]An economic argument for forward presence would be to show causality between forward presence, stability, economic development and hence U.S. economy. What is the threat to the $200 billion in U.S. direct investment overseas in Europe, for example, and other assets?

Until such a project is undertaken, the Navy must rely on implicit military judgment supported by words alone to articulate the importance of and benefits to be realized from naval forward deployments and combined exercises. At present, no model, simulation, or mathematical formula has been adapted to successfully compute those benefits.

IV. MULTICULTURALISM AND ITS EFFECT ON NAVY C3

A. OVERVIEW

> Know the enemy and know yourself; in a hundred battles you will never be in peril. (Sun Tzu, transcribed by Griffith, 1963, p. 84)

Traditionally, in the U.S. military, the emphasis has been on knowing "the enemy," with less importance being given to knowing "yourself." Knowing "yourself" has been relegated to a distant second--and last--place in the knowing game. However, Sun Tzu made no distinction between the relative importance of the two: "Know the enemy *and* know yourself...." While they are equally important to "know," they have not been equally emphasized, with the bulk of attention and information gathering directed at the enemy and his disposition.

It is not only knowing one's own force *disposition* in terms of how and where they are disposed, but perhaps more importantly, in terms of their nature--their tendency to act in a certain manner under certain circumstances. How does one truly know one's own force *disposition* when that force is a coalition made up of several different nations' forces? Afterall, as stated by the authors of Joint Pub 1, "The first priority is to have a full and frank appreciation for the capabilities and limitations of all friendly forces."

(Joint Pub 1, p. 32) One must overcome the multicultural barriers or differences[1] which make such crucial appreciation and knowing difficult.

B. THE THIRD "C" IN C3: COMMUNICATIONS

Fundamental to C3 is communication. Command and control is impossible without it. We must be able to communicate with and be understood by coalition partners. Communication is key. In order to communicate and communicate effectively, we must be able to overcome multicultural barriers to communication.

Multicultural barriers to communication between coalition partners can be surmounted by continual interaction and subsequent fostering of relationships. Building a rapport with partners ensures that all partners have confidence in each others' abilities and trust them to perform. Trusting coalition partners results in a major benefit particularly appropriate in this era of smaller navies: all forces can be employed to their utmost potential; redundancy is reduced since all partners are trusted to do their job, and the need for contingency plans

[1]Multicultural barriers and differences here do not refer to language differences, which present major obstacles themselves. Rather, the multicultural barriers discussed here involve more subtle differences, such as nuances within communication which transcend any particular language.

in the unfortunate case that a particular partner fails to perform or even show up are minimized:

> The multinational command problem is different [from a multiservice command]; Goldwater-Nichols does not apply. A subordinate of another nation can wriggle out of his [CINC's] control, or can drag his feet, or can "say yes and do no." So what does a coalition CINC do? The answer: He leads...persuades...cajoles...and he hopes that the coalition's political authorities and their national contingents reporting to him as operational commander will understand their own enlightened self interest...and do the right thing. But always in the back of his mind is the thought that the subordinate formation may not show up at all. (Cushman, 1991, p. 49)

Continual operations with these other nations' navies can build a firm trust that can alleviate some of that doubt in the CINC's mind about a particular navy's intentions. It can be realistically expected that when they "say yes" they "mean yes," and they "do yes." Not having to worry about coalition partners' possibly inconsistent underlying motivations and intentions lifts a tremendous burden from the CINC. He can then turn his full attention to fighting the war against the enemy and be less distracted by infighting among coalition partners. With a strong coalition, he need not trouble himself with own force doubts. He can reach absolute confidence in his own force's *disposition*.

Finally, the sheer size of coalition forces, coupled with less available response time[2], makes the delegation of authority--oftentimes to an allied commander--necessary. The CINC must implicitly trust partners/subordinates to do the right thing. Having previously operated with a particular country's forces raises both the CINC's awareness of that force's potential as well as his trust in that force to operate effectively.

The following excerpt from General H. Norman Schwarzkopf's autobiography provides a real-world example of exercises' enabling the commander to know his forces: "...we knew they [the Egyptians] could fight--Egyptians had been exercising with Central Command forces for years." (Schwarzkopf, 1992, p. 388) Exercises not only provide excellent practice, but they also reveal to a potential CINC the capabilities and limitations of a force, ensuring that that force is optimally employed.

C. CULTURE AND COMMUNICATION

In the introduction to Volume 13 of the International and Intercultural Communication Annual, editor Stella Ting-Toomey, recognized communications expert, stresses "the importance of understanding language, communication, and

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[2]This shortened response time is due to the increased pace of war enabled by technology.

culture *in situ*." (Ting-Toomey, 1989, p. 13) She further states that "...multicultural team efforts are urgently needed in the theorizing phase concerning language, communication, and culture." (Ting-Toomey, 1989, p. 14) She posits that a well-rounded theory of communication should focus on the influence of cultural variability and social cognitive variability, which stems from that same cultural variability. (Ting-Toomey, 1989, p. 15)

Beth Haslett, developmental communications authority, goes so far to say that culture and communication are inseparable. She states that culture and communication are inextricably tied and that culture cannot be ignored in any full analysis of communication. "Culture is *always* an issue and should not be a taken-for-granted concept in our analysis of communication." (Haslett, 1989, pp. 31-32) She illustrates how the two components are interrelated in the following:

> ...both cultural values and communicative practices vary widely. Communicative practices are based upon and convey cultural values, and such values, as well as practices, will vary across cultures. (Haslett, 1989, p. 28)

Scholars have clearly demonstrated strong differences in communication across cultures and subcultures. These differences in turn "determine how messages are sent, interpreted, and responded to." (Haslett, 1989, p. 26)

Obviously, there are wide implications for Navy C3, the heart of which is sending, receiving, and understanding messages with precise meaning.

The different aspects of culture's impact on communications are discussed below.

1. General

The cultural background of a communicator influences almost every detail of his communication. (Harms, 1973, p. 30) His culture actually shapes the way he communicates. Although rather obvious, the following should not be overlooked:

> Communication between communicators of similar cultural background is usually easier, more reliable, faster, safer, etc., than is communication between communicators of dissimilar cultural backgrounds." (Harms, 1973, p. 30)

Some of the specific reasons for this disparity in communication facility are discussed next.

2. Shared Tacit Knowledge

Culture provides the shared tacit knowledge that enables members to understand and communicate with one another. This tacit knowledge, ingrained in one's culture, provides a frame of reference for "understanding and evaluating communicative behaviors of members of a particular cultural group." (Haslett, 1989, p. 19-21)

Not recognizing this facet of culture's impact on communication can be limiting:

> When communication scholars fail to acknowledge the role of culture as tacit knowledge in communication, only the *form* of communication is analyzed, while its *function* remains obscure. (Haslett, 1989, pp. 20-21)

In C3, communications *function*ality is key. Put simply, the *function* of communications is to enable command and control.

3. By Definition

Inherently, communication is a sharing, social process:

> Strictly, the word communication comes from the Latin *communico*--meaning share. *Share*, notice, not "I send messages." Communication is essentially a social process. (Cherry in Harms, 1971, p. 2)

4. Mutual Knowledge

> For successful communication, a high level of mutual knowledge is required. Anything which contributes to this will enhance our belief that we are clear about what the other intends. (Good, 1991, p. 233)

The ability to understand another is a basic element of communication competence.[3]" (Powers and Lowery in Asante and Gudykunst, 1989, p. 254) Although blatantly obvious, this facet of communication often is taken for granted and not given its due consideration.

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[3]"Communication competence is defined as "the degree of congruence between the cognitions of two or more individuals following a communication event." (Powers and Lowery, 1984, p. 58)

Merely speaking the same language does not ensure communication; there is significantly more to communicating than simple word recognition. Communication is highly complex and requires a "mutual knowledge," which can only be attained by continuous exposure of separate parties to one another.

This "mutual knowledge" can also be thought of as empathy, a vital component of successful communication. During the proceedings of a workshop on Military Implications of United Nations Peacekeeping Operations, sponsored by National Defense University's Institute for National Strategic Studies, it was agreed by participants that to provide a balanced appraisal, it is necessary to "divorce ourselves from our western preconceptions, to step into the shoes of those whom we need to comprehend, and to observe the world from where they stand." (Lewis and Julian, eds., 1992, p. 5)

In *Intercultural Skills for Multicultural Societies*, author Carley H. Dodd, an intercultural and communication expert and consultant, underscores the importance of empathy in the communication process. He states that understanding things from another's point of view is critical for communicating and performing to one's potential in intercultural communication. (Dodd, 1987, p. 7)

5. Human Nature

Social cognition, how people think about people, and social cognitive processes play an important role in intercultural communication. (Asante and Gudykunst, 1989, p. 204) Humans cannot easily overcome their own social cognitive biases, and human nature often transcends even the best of intentions. People automatically migrate to, or are inclined toward, things with which they are familiar and like:

> Based on the immediacy [an evaluative dimension that includes judgments such as good/bad, positive/negative, and close/far] principle...people approach persons and things they like, and avoid or move away from negatively valanced stimuli." (Asante and Gudykunst, p. 165)

By being exposed to things with which they are unfamiliar--negatively valanced stimuli--people become more accepting of the "outcast":

> Positive feeling toward an outgroup [i.e., from another culture] are generated from intergroup interaction involving a member of an outgroup.... (Asante and Gudykunst, 1989, p. 209)

Finally, as relationships become more intimate, cultural dissimilarities become less important (Asante and Gudykunst, 1989, p. 211)

6. Advantages to Effective Intercultural Communication

Being an effective intercultural communicator, though an advantage in itself, spawns other advantages, among them the ability to "conclude intercultural tasks more

efficiently." (Dodd, 1987, p. 3) This added benefit is particularly relevant to coalition operations: "...intercultural skills produce a condition of intercultural effectiveness." (Dodd, 1987, p. 4)

7. Conclusion

Although people are constrained by their own culture's communicative patterns, communication across cultures can most certainly occur. Consider that for every example of cross-cultural miscommunication, there is at least one example of cross-cultural communication, "at least one case in which interlocutors successfully adapt to each other's cultural styles and personal idiosyncracies." (Johnstone, 1989, p. 153) It takes practice, i.e., exercises, to communicate with success cross-culturally.

Cultural differences most definitely contribute to communication difficulties. However, author Barbara Johnstone contends there are other contributors as well:

> Problems [of interaction] are not simply the result of intercultural difference. At root, I think, they are the result of failures of good will, the will to adapt and understand. (Johnstone, 1989, p. 154)

This lack of willingness to "adapt and understand" can be alleviated in a multicultural coalition by continual interaction, in the form of combined exercises with the

members. With increased familiarity, a rapport can be established and built upon that results in mutual trust and effectiveness.

Researchers emphasize that intercultural training can significantly improve communications effectiveness. (Dodd, 1987 p. 8) Combined exercises are ideal for this type of training. The beauty of combined exercises is that no set agenda or syllabus for this intercultural training needs to be developed or maintained. The training, rather, is on the job training (OJT)--the exercises themselves.

With concerted effort and understanding of its value, communication effectiveness, also defined as "minimizing misunderstanding[4]," (Gudykunst and Kim, 1984, p. 191) is an attainable goal in the intercultural environment of a coalition.

D. MINI-CASE STUDIES IN CULTURE AND COMMUNICATION

To illustrate culture's impact on communication, two mini-case studies are presented. The first mini-case study focuses on Arabs and Jews in Israel. The cultural differences go beyond religious differences. There is a fundamental cultural difference which manifests itself in their very different communications styles. The second case

[4]Rather than "minimizing misunderstanding," perhaps a more optimistic goal would be to "maximize understanding."

study involves Japanese and American businessmen and how they have both had to adapt to each others' cultural differences to be effective.

1. Mini-Case Study: Arabs and Jews in Israel

One example of different communication styles which can create miscommunication leading to ill will is the intercultural encounters between Arabs and Jews in Israel. The two communication styles are antithetical:

> ...communication between members of the two cultures is often impeded by unmatching assumptions and conflicting evaluations of various aspects of the communication process itself. (Griefat and Katriel, 1989, p. 133)

The Arabs embrace *musayara*[5], which is associated with an "other oriented, 'humoring,' 'conciliatory' attitude," with an emphasis on maintaining harmony in social relations. Its roots lay both in religious Islamic doctrine and in the

> ...high degree of interdependence that characterized the social relations of early Arab communities. The notion of musayara encapsulates much that is distinctive to Arabic speechways and interpersonal conduct, and...'doing musayara' is a major communicative vehicle for the maintenance of social relations and the cultivation of traditional patterns."(Griefat and Katriel, 1989, pp. 121-122)

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[5]Musayara means "going with" or "accompanying" one's partner in conversation. It is central to Arab culture: "Musayara is in the blood of every Arab person." (Griefat and Katriel, 1989, p. 121)

To do musayara requires self-control,

> ...a virtue both children and women are said to lack as well as an ability to use language indirectly and artfully. So whereas women and children are expected to act with musayara toward grown men, who are considered their status superiors, they are not considered sophisticated enough to be able to utilize the resources of language and etiquette in an elaborate way."[6] (Griefat and Katriel, 1989, p. 126)

Juxtaposing the Arab musayara is the Jewish dugri speech, also known as "straight talk." This natural, direct, forceful, highly confrontational style contrasts sharply with the "softer," more self-controlled and indirect Arab musayara. Even where good will initially prevails, these diametrically opposed communication styles result in Arabs' and Jews' "rubbing each other the wrong way" and impede successful interaction (Griefat and Katriel, 1989, p. 133)

The accepted disjunction between an Arab's inner self--what he believes--and his public image--what he says--allows him to maintain a high degree of ambiguity and to

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[6]Here it should be noted that the above is of particular significance to coalition operations involving U.S. and Arab forces. With American women becoming more and more integrated into the U.S. Navy, it will not be unlikely for coalition partners to hear women's voices over various communications facilities, or, more significantly, to have a female as the commander of the coalition force. To familiarize or "acclimate" coalition partners is in everyone's best interest. This familiarization is best accomplished through combined exercises and combined operations. A crisis is not the time to see how coalition partners react to women in positions of authority.

freely embellish the facts. Hence, "Arab communication is perceived by many Jews to involve a high degree of 'fabulation'...and to inspire little trust." (Griefat and Katriel, 1989, p. 134)

There is a sharp contrast between the two communication modes. The Arabs' indirect method, oftentimes perceived as speaking behind the back, is thought of as diplomacy by Arabs. The Jews' direct method, seen as harsh and abrasive by Arabs, displays and inspires trust according to the Jews. Clearly, one's perception depends on one's perspective. In this case of the Arabs and Jews in Israel, better intercultural understanding is most certainly necessary for mutual acceptance to occur.

2. Mini-Case Study: American and Japanese Businessmen

The U.S. and Japan are two countries separated by more than an uncommon language. The two cultures are fundamentally different: The U.S. is an individualistic nation, while Japan is a collectivist nation. The strong individualism in the U. S. makes it difficult for its citizens to interact with those from collectivist cultures (Asante and Gudykunst, 1989, p. 170).

Individualistic cultures, such as that of the U.S., tend to use a direct conflict, solution-oriented communication style, while collectivist cultures, such as Japan, tend to use an indirect conflict, conflict-avoidance

communication style. (Asante and Gudykunst, 1989, p. 353-354) This difference, if not recognized, understood, and adapted to, can have deleterious effects on business relations, not to mention politics.

Individualistic cultures are low context cultures, which emphasize direct verbal assertion, explicit meanings, and individual, or personal, judgments, goals, needs, and outcomes. Collectivist cultures, on the other hand, are high-context cultures, valuing indirect verbal assertion, implicit meanings, and collective, or group judgments, goals, needs, and outcomes. They also have more rules about obedience in general, avoiding loss of face, and maintaining harmonious relations both with nature and in groups. (Asante and Gudykunst, 1989, pp. 362-363) In order to be effective, both cultures must understand this difference and adapt to it.

The following should be considered by any businessman attempting to do business with the Japanese:

> The Japanese, like their language, are traditionally evasive in a polite way and do not go in for the direct approach. It pays to be patient and to remain flexible as the Japanese are apt to do business on both logical and emotional levels. They are affected as much by the way of doing business as by the content. Strong sales pitches should not be given nor should provocative questions be asked in such a direct manner that they require unequivocal answers. They can easily be resented. Smoothness is all important.... Decisions in Japan are reached by consensus and by precedent. Once a decision is made, it is binding. (Brannion in Dodd, 1987, p. 96)

Indeed, it would appear that the process of international trade in Japan is more a matter of how to do the process than what the process, or content of negotiations, includes. (Brannion in Dodd, 1987, p. 98)

From the other perspective, a Japanese businessman in the U.S. puts his difficulties quite plainly:

> ...the most difficult part of my life here is to understand Americans. They are so irrational and illogical. (Harris and Moran, 1979, p. 78)

Most Americans, and probably all American businessmen, would not consider themselves "irrational and illogical." But that is how they are perceived by Japanese businessmen due to major cultural differences and disparate ways of doing business.

E. COOPERATION AND COMMUNICATION

"Cooperation involves a continuous process of learning and adaptation." (Mayor, 1991, p. 303) Learning and adaptation here specifically apply to culture, discussed earlier. The three--culture, cooperation, and communication--are most certainly correlated to one another. Not surprisingly, a large number of studies have demonstrated that increasing the amount of communication increases the level of cooperation. (Good, 1991, p. 233) When discussing cooperation, one must be careful about the context in which it is examined. As addressed in Chapter

III, cooperation in an "cooperation versus competition" context is not appropriate to this study. This study investigates cooperation in its purest form: cooperation for cooperation's sake. This type of cooperation has not received much attention by social psychologists:

> Indeed, social psychologists have preferred to study conflict and competition between groups; only a few experiments are concerned with cooperation that is clearly not within but between groups. Attitudes as prejudices and stereotypes, as well as behavior in the form of discrimination and hostility have been intensively analyzed empirically since the beginning of this century. Cooperation, or just friendly relations between groups, remained something like a background for comparison. (Feger, 1991, p. 282)

This type of cooperation--friendly relations between groups-- is extremely important and should be considered more than simple "background" for comparison. It is key to successful coalition operations, and it should not be taken for granted:

> International cooperation...does not exist once and for all.... It is a complex and evolving process whereby a network of interrelations is built up in the pursuit of common goals. (Mayor, 1991, p. 303)

A manifestation of the above is the virtual disintegration of the coalition after the Gulf War ended. The coalition is gone; there is no pressing "common goal" to keep it alive. However, the precedent has been set, and the effectiveness of coalition operations was proven during the Gulf War, which will be discussed next.

F. THE GULF WAR

1. The Commander

General H. Norman Schwarzkopf was, without a doubt, the right man in the right place at the right time. The integration of diverse units into a cohesive fighting force was achieved largely due to his skill as a commander and his deftness in managing the relations with the various forces of the nations of the Coalition. (Cheney in Conduct of the Persian Gulf War, Final Report to Congress p. xx-xxi)

His unique experience of having lived in the Middle East (Iran) as an adolescent provided a basis for understanding of Middle Eastern culture which proved invaluable during Operations Desert Shield and Desert Storm. He was the ultimate diplomat. Even after the Gulf War, Schwarzkopf continued to exercise superb diplomacy as the underlined section of the following excerpt from his autobiography demonstrates: "Highly cultured men such as King Fahd of Saudi Arabia and Sultan Qaboos Bin Said of Oman saw Saddam as a thug...." (Schwarzkopf, 1992, p. 292) He is subtly practicing musayara here, flattering his Arab friends.

Schwarzkopf performed with great diplomacy during the Gulf war as well:

> I had to mask my sense of urgency in my dealings with the Saudis. To my consternation, their most pressing concern was neither the threat from Saddam nor the enormous joint

> military enterprise on which we were embarked. What loomed largest for them was the cultural crisis triggered by the sudden flood of Americans into their kingdom. (Schwarzkopf, 1992, p. 332)

Because General Schwarzkopf understood from the Arab perspective the potential negative impact of U.S. forces on the Saudis, he indulged them. He did not force them to see the situation through his eyes but instead did his best to accommodate them.

For the sake of the coalition, and in order to become effective, he consciously adapted to the Arab culture:

> Kahlid and I would sit in his big maroon overstuffed chairs, while his aide served fancy fruit juices, coffee, and cappuccino. I'm not known for being patient, but to do the job there, that's just what I was. Decisions that would require fifteen minutes in Tampa or Washington would often consume three hours in Riyadh, as we sipped coffee, told stories, and philosophized." (Schwarzkopf, 1992, p. 334)

The U.S. and Britain have in recent history been the closest of allies, and their unique relationship was no different during Desert Storm. On a personal level, General Schwarzkopf trusted implicitly the British Commander, as the following demonstrates:

> It was no coincidence that I'd gone to him [Lieutenant General Sir Peter de la Billiere, British Commander in the Gulf] first [with the battle plan]: Great Britain had been our closest western ally in the crisis, and he and I had become good friends. I trusted his brains and judgment so much that I asked his advice on even the most sensitive military issues. (Schwarzkopf, 1992, p. 385)

General Schwarzkopf had developed a relationship with

Billiere that fostered confidence and trust. This same type of rapport can be extended to navies. Strong relationships with allies and friends can be maintained through such means as port visits, combined exercises, joint training, disaster relief and reconstruction (Hays in McKnight, 1989, p. 126).

2. The Coalition

Throughout the Final Report to Congress on the Conduct of the Persian Gulf War, attribution for the creation of a viable coalition consisting of 23 nations with unique and diverse doctrine, culture, customs, and capabilities is given to past military cooperation in NATO and ANZUS (Australia-New Zealand-United States), where uniform procedures and communications methods were developed; combined exercises, both bilateral and multilateral; U.S. training of members of the allied forces; and overall close coordination.

Further, the fact that the U.S. had previously exercised with 16 of the 18 nations of the U.S.-led coalition significantly enhanced that coalition's performance. Also, over forty years of U.S. naval presence in the Gulf, and, specifically, U.S. performance in Operation Earnest Will, paid off in the Gulf Cooperation Council's (GCC) willingness to trust the United States. (Final Report to Congress, 1992, p. I-49)

Crucial to the success of the coalition was keeping Israel, despite Saddam Hussein's efforts to the contrary, out of the war. "We could not have succeeded without a history of trust and cooperation with the Israelis." (Final Report to Congress, 1992, p. xxiv) Hence, trust is important even when forces are not specifically a part of a coalition.

There were several important lessons learned with regard to coalition development, coordination, and warfare. Pertinent lessons listed in the Final Report to Congress are discussed below. Joint Universal Lessons Learned drawn from the Joint Universal Lessons Learned System (JULLS), will be addressed in section 3 below.

a. Relationship Building

> The Persian Gulf War teaches us that our current planning should pay explicit attention to the kinds of relationships which might support future coalition efforts. Building the basis for future cooperation should be an explicit goal of any of our international programs, including training, weapons sales, combined exercises and other contacts." (Cheney in Final Report to Congress, 1992, p. xxiv)

As previously discussed in Chapter II, laying the foundation for future cooperation and relationship building certainly are not but should be explicit goals in "...From the Sea."

b. Practice

> ...the war has reminded us of how important...practice in international cooperative efforts can be to build the trust and capabilities that will be needed to put together future coalitions and to enable them to operate

> successfully in future crises. It takes years of working together to build these kinds of ties. (Cheney in Final Report to Congress, 1992, p. xxv-xxvi)

This is an extremely important lesson which seems to have been overlooked in "...From the Sea." The benefits of practice--in the form of combined exercises--manifested in trust and capabilities, are not even mentioned in the White Paper. Furthermore, coalitions cannot just be assumed, as is done in "...From the Sea." They cannot be quickly thrown together without any sort of previous practice at operating together. The U.S. Navy must continue to operate forward and conduct combined exercises so as to not lose those special "ties" which have been built by "years of working together."

c. Global Networking

> The US needs to cultivate global network of regional partnerships as a basis for forming coalitions during crises. (Final Report to Congress, 1992, p. I-49)

Due to its mobility and flexibility, this goal can most easily be accomplished by the U.S. Navy.

d. Combined Exercises

> Combined exercises are invaluable to effective coalition operations. (Final Report to Congress, 1992, p. I-50)

That simple statement is the thrust of this thesis. Determining exactly how "invaluable" combined exercises are is extremely difficult.

e. Summary

In spite of the coalition success, owing much to NATO and Gulf exercises (where the U.S. has maintained a continuous naval presence for over 40 years), the Final Report to Congress concludes that combined forces C3 is still rudimentary (Final Report to Congress, 1992, p. I-49) and that there is a need for further improvement in the ability of coalition forces to conduct combined operations. (Final Report to Congress, 1992, p. I-2)

Most certainly, next time there will not be such a long period to develop a coalition. (Final Report to Congress, 1992, p. I-49)

3. Joint Universal Lessons Learned (JULLS)

Many of the Gulf War lessons learned have been consolidated in the Joint Universal Lessons Learned System (JULLS). Several lessons learned with regard to coalition warfare will be discussed next. The lesson learned and recommended action will be followed by this author's comments.

a. Liaison Officers

Lesson learned: In coalition warfare, liaison officers well-versed in U.S. military doctrine are vital. Aside from facilitating coordination, enhancing interoperability, and reducing the potential for fratricide, liaison "helped foster confidence, developed rapport among

coalition and U.S. forces, and was the cornerstone to the success of the Coalition effort." (Schmidt, 1991, JULLS 14454-67200)

Recommended action: Continue liaison team exchanges before and during hostilities.

Comment: Liaison teams proved extremely critical to coalition coordination and "highlighted the need for both human and equipment interoperability in coalition operations." (Wentz in Campen, 1992, p. 19) Liaison has many of the unquantifiable benefits of combined exercises: confidence, trust, and rapport, for example. Though difficult to quantify, these benefits are most acutely necessary for successful coalition operations. It is these very liaison officers on which Navy C3 depends. Major General Sidney Shachnow, commanding general, JFK Special Warfare Center and School, posits that liaison officers' contribution as a force multiplier will only be as good as their ability to "skillfully pass information through effective intercultural communication." (Shachnow, 1993, p. 22) According to LCDR Bill Jacobs, CENTCOM Communications Officer, there has been very little change with regard to navy coalition communications "before and after Desert Storm." (Phoncon of 13 March, 1993) The program of assigning U.S. officers on board allied ships to enhance C3

continues.[7] With personnel cutbacks, the question is, "Will manning be adequate in the future to support this liaison function?"[8]

b. Standardization Agreements

Lesson learned: NATO Standardization Agreements (STANAGS) were beneficial, but did not extend to all members of the coalition.

Recommended action: To rectify this shortfall, JCS is working for STANAGS with all U.S. allies to expedite coalition warfare. (Fulbright, 1991, JULLS 31449-59000)

Comment: This action is a superb first step. However, it is a first step only. STANAGS are not the entire solution; they are a part of it. STANAGS have no lasting impact if they are not exercised and tested in combined exercises and operations.

c. Aircraft Visual Recognition Training

Lesson learned: Coalition forces "had no aircraft visual recognition training and could not function

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[7]The allied operation in Somalia is the latest occurrence of U.S. liaison officers operating on coalition ships.

[8]Liaison officer billets are not designated billets in a ship's manning document (SMD). They come "out of hide." Furthermore, with sparce manning, it is tempting for ship commanders to send as the liaison officers their less than stellar performers, since they cannot afford to lose their best performers in this era of "doing more with less." This is an unfortunate, but real, dilemma.

in a US/NATO type air defense system." To reduce the chance of fratricide, allies must be familiarized with aircraft silhouettes.

Recommended action: Ensure theater-specific aircraft recognition guides are readily available upon request.

Comment: Again, this action is commendable as a first step. Recognition guides are good; actual sighting and identifying of allied aircraft in combined exercises is better. Seeing the actual aircraft fly by at supersonic speed in live exercises has a much greater impact on observers than does seeing a black and white, poorly reproduced still photograph.

d. Coalition Building

Lesson Learned: "Coalition building begins long before the war. It is an ongoing process which in the case of non-NATO nations...builds a consensus that operating with the U.S. is the 'right' thing to do. This consensus can be translated into a willingness to join warfighting forces as was the case in Argentina. Argentine participation in Desert Shield/Desert Storm was unprecedented. It came about because of a great deal of attention nurtured by a Navy relationship over a long period of time. This experience can be applied to other countries." (Roth, 1991, JULLS 51358-25100)

Recommended Action: Increase Title X DCCEP and Latin American Cooperative Funding for CINC's.

Comment: Argentina's participation in the coalition illustrates the impact an ongoing Navy relationship can have on an otherwise disinterested party.

e. Combined Planning

Lesson Learned: The process of developing combined operations plans was at least as important as the actual plans themselves that were produced. The combined planning process was the "focal point for coalition coordination and was essential to developing the close ties and mutual trust which ensured the success of coalition efforts." (Townsend, 1991, JULLS 70159-14239)

Recommended Action: The coalition process "must include representatives from all key nations, start early, and be used as a tool to build and strengthen the coalition." (Townsend, 1991, JULLS 70159-14239)

Comment: Again, the importance of simply operating together, here, in developing combined operations plans, is demonstrated: the process of merely working together in planning "was essential to developing the close ties and mutual trust which ensured the success of coalition efforts." (Townsend, 1991, JULLS 70159-14239)

G. AMERICAN AND BRITISH MULTICULTURALISM

The idea of interoperability's being enhanced by continuous combined operations and exercises is not limited to being better able to overcome language differences. That area could be a thesis by itself. There is a more fundamental benefit accrued with combined operations and exercises. To illustrate how this intangible benefit transcends language barriers[9], two examples involving English-speaking parties--American and British forces--are provided below. The first case demonstrates the hazards of ambiguity; the second example highlights difficulties encountered when there is a total lack of exposure to operating with another force.

1. Korea

In April 1951, the British 29 Brigade was holding positions along the line of the Imjin River, thirty miles north of Seoul. The 29 Brigade was commanded by British Brigadier Tom Brodie; however, he was under temporary American command. As such, "he could not be expected to achieve the clear understanding with higher formations that would have been possible with his own fellow countrymen." (Hastings, 1987, p. 218) In fact, a British officer at

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[9]It has often been said that America and Britain are two nations separated by a common language.

brigade headquarters told how "when Tom told Corps that his position was 'a bit sticky,' they simply did not grasp that in British Army parlance, that meant 'critical.'" (Hastings, 1987, p. 218)

Due to the lack of understanding of 29 Brigade's desperate predicament, American Corps headquarters twice told Brodie that he could not withdraw. His brigade was virtually shattered beneath his eyes. (Hastings, 1987, p. 218) The 29 Brigade suffered many needless casualties because of a simple misunderstanding which might not have occurred if those forces had previously operated together and established a relationship in which communication flowed unimpeded.

Author Max Hastings' assertion above that Brodie "could not be expected to achieve the clear understanding ... that would have been possible with his own fellow countrymen" (Hastings, 1987, p. 218) may have been appropriate in 1951, but it is not so now. With combined training exercises and combined operations, a clear line of communication and understanding can be established so that relegating one's command in a coalition does not lessen that command's effectiveness or unnecessarily endanger that command.

2. Desert Storm

The importance of fleet interaction was discovered by the British naval forces during the Gulf War. Commodore Christopher Craig (RN), Commander of British naval forces in the Gulf during Desert Storm, had no difficulty operating with U.S. Atlantic Fleet naval forces, with whom his navy had previously conducted periodic exercises. However, he encountered some difficulties when dealing with U.S. Pacific Fleet units:

> ...a great deal of discussion took place, which included certainly two major NATO procedures which were not common to the Pacific Fleet where my staff influenced individuals to apply these procedures.... They [the Pacific Fleet] are not into that regular honing that comes with the close integration with other Allied navies to the same extent as the Atlantic Fleet, and that is no great surprise to me. (*Defence Committee Tenth Report: Preliminary Lessons of Operation Granby*, 1992, p. 59)

V. CASE STUDY: U.S., BRITISH, AND FRENCH C3 PERSPECTIVES

A. INTRODUCTION

Because C3 and C3 systems are so multifaceted, they cannot be discussed within one set of specific guidelines. Communications, computer networks, intelligence systems, system architectures, and chains of command must be examined collectively and will be examined in the course of this case study. Discussion will focus on the C3 and C3 systems of the United States, Great Britain, and France and how these countries' strategic cultures shape their perceptions of C3.

The point of the following case study is to demonstrate that three very culturally similar countries, who would appear to have no significant problems operating together in a coalition, have critically different interpretations of what C3 actually is. These differences are just one manifestation of how each country's strategic culture distinctly shapes its perception and makes it unique. In an area where interoperability is a prime goal--i.e., C3--the perception of that focus is different for all three countries. Considering these viewpoints when conducting combined operations will give all parties a broadened perspective and may help to improve the efficiency of those operations.

First, an overview of U.S. C3 will be presented. Then a synopsis of British and French C3 will be provided. Desert Storm will be the context of much of the discussion which follows for two reasons. First of all, Desert Storm was the first instance, since the passage of the Goldwater-Nichols Department of Defense Reorganization Act, of large scale employment of armed forces employment during a conflict. Secondly, the Gulf War provided an excellent opportunity to view C3 systems in action.

B. U.S. OVERVIEW

C2 is not a new concept; in fact it is as old as the idea of armies. Over 2500 years ago, Sun Tzu wrote,

> If you know the enemy and know yourself, you need not fear the result of a hundred battles. If you know yourself, but not the enemy, for every victory gained you will also suffer a defeat. If you know neither the enemy nor yourself, you will succumb in every battle. (Sun Tzu, translated by Giles, 1944, p. 51)

Although war has drastically changed over the intervening years, C2/C3 is still information intensive with respect to those same areas Sun Tzu addressed: the enemy, the environment, and one's own force status. Lawson's model of the C2 process, presented in Chapter I, illustrates those very areas. Although C2/C3 is far from new, C2/C3 issues have only recently--in the past ten to fifteen years--received high level attention. Both Presidents Carter and Reagan recognized the value of C3 as a force multiplier and

supported C3 initiatives and issues. The Goldwater-Nichols Department of Defense Reorganization Act of 1986, with its emphasis on joint interoperability, inherently stressed C3 and boosted its importance.

Since C3 lacks "glamour" and is not hardware as most U.S. military professionals perceive hardware -- in the form of weapons and platforms -- C3 has traditionally taken a back seat in the military establishment, even though its importance has been unequivocally and unanimously acknowledged. Weapons and platforms are palpable resources; C3 is a nebulous word with many meanings and disparate interpretations. Its intangibility has hampered its support. However, with rapidly declining forces and defense budgets, the military establishment is now espousing C3 as a viable force multiplier. The Gulf War (to be discussed shortly) clearly demonstrated the importance of C3 in a wartime environment.

The discussion on U.S. C3 will be broken up into four separate areas: the World-Wide Military Command and Control System and its follow-on General Command and Control Network; miscellaneous systems; C3 in Operation Desert Storm; and Copernicus and beyond, including C4I for the Warrior.

1. World-Wide Military Command and Control System (WWMCCS) and the General C2 System

The need for a comprehensive C3 system to coordinate C3 activities was recognized during the late 1950's. The April 1961 Bay of Pigs invasion, marked by many embarrassing C3 failures, further highlighted the need for a C3 system. In that same year, the Joint Command and Control Requirements Group (JCCRG) developed WWMCCS to coordinate operations and reduce acquisition, software, and maintenance costs of the services' existing computer equipment. WWMCCS evolved into a world-wide network of interconnected computers and data processors that supported the operational C3 requirements of the National Command Authority (NCA), the Joint Chiefs of Staff (JCS), the unified and specified commands, and the services.

WWMCCS can be thought of as a system of systems whose total is more than the sum of its parts. It consists of personnel, communications, processing equipment, facilities, and procedures for planning, directing, and controlling the operations of U.S. military forces. Key components include the National Military Command System (NMCS); unified and specified command C3 systems; service headquarters' WWMCCS related management information systems; service component C3 systems; and DOD agencies' C3 support systems.

WWMCCS provides a means for the President, Secretary of Defense, JCS, and CinCs to be informed of important events affecting national defense; provided adequate information on which to base military decisions; supplied the means for transmitting orders; and given the ability to monitor the results. In short, the most fundamental requirement of WWMCCS is to transfer information.

WWMCCS has not been without its growing pains. With such a broad, all encompassing mission, complexity as well as fragmentation are almost unavoidable, especially when one considers the variety of computers and software that must be integrated.

Currently, WWMCCS is being phased out. The WWMCCS ADP Modernization Program (WAM) was terminated in December 1992. WWMCCS will be replaced by a General C2 System which is currently evolving and is a product of C4I for the Warrior, which will be discussed later. One main difference between the older WWMCCS and the new General C2 System is in their systems engineering designs. WWMCCS was a system of systems that coordinated the individually developed C2 systems of each of the services. The new C2 system will be an entirely new system with which each of the services will be totally interoperable. Rather than being driven by the individual services' disparate requirements, the new C2 system will be the driver.

Supplementing the evolving C2 system are new, technologically advanced systems, which will now be discussed.

2. Miscellaneous C3 Systems

Information on the following systems comes from various lectures and briefings attended by the author in 1991-1993.

a. Global Positioning System (GPS)

The GPS is a satellite system which provides instantaneous navigational fixes for aircraft, ships, submarines, vehicles, and individuals on a global basis.

b. Single-Channel Ground and Airborne Radio System (SINCGARS)

SINCGARS is a tactical communications system for the Army, Marines, and Air Force. This system, which avoids jamming and interception by switching frequencies about 100 times per second, was designed as a replacement for the standard FM field radio used since Vietnam. (Rawles, 1989, p. 38)

c. Joint Tactical Communications Program (TRI-TAC)

The goal of this system, which is not fully implemented, is to allow different military services--including allies--to communicate with one another. TRI-TAC was established to "design, develop and acquire tactical switched communications equipment for support of all U.S.

services." (*Jane's C3 Systems*, 1992, p. 163) TRI-TAC, which accomodates the transition from analogue to digital systems, can be divided into five main areas: terminals, switching, control, transmission, and combining. (*Jane's C3 Systems*, 1992, p. 163)

One component of the TRI-TAC system is the Army's Mobile Subscriber Equipment (MSE), a digital mobile communications network which links all units together, from the corps to brigade levels. Both TRI-TAC and MSE were used with great success during the Gulf War.

d. Military, Strategic, Tactical, and Relay Satellite Communication System (MILSTAR)

Currently, this system is being scrutinized because of cost overruns. It was designed to provide Extremely High Frequency (EHF) and Ultra High Frequency (UHF) communications channels, supplementing the Navy's Fleet Satellite Communications System (FLTSATCOM) and the Defense Satellite Communications System (DSCS).

e. Joint Surveillance Target Attack Radar System (JSTARS)

Although still in its prototype stage, JSTARS was deployed to the Gulf aboard two E-8As, which are modified Boeing 707s. It performed beyond expectations, locating Scud missile launchers, armored columns, and air defense sites. (Signal, 1992, p. 125) With its synthetic

aperture radar (SAR) system, it is capable of providing enhanced images of targets at great distances. The E-8A relays its pictures through AWACS and Mobile ground stations.

f. Joint Tactical Information Distribution System (JTIDS)

JTIDS's goal is to provide U.S. and NATO forces with a secure, jam-resistant data link for multiple platforms to share information, such as location and identity of enemy aircraft.

There are many different systems which could be tied to C3 or C3 support. However, for the purposes of this case study, only the more recent systems which played an active role in Operation Desert Storm are addressed. Specific information on satellite systems, because of its sensitivity, will not be presented, although the importance of satellite systems during the Gulf Crisis cannot be overstated.

3. Operation Desert Storm

a. Operations and Organization

The Gulf War acutely demonstrated how far the United States had advanced since Korea and Vietnam with respect to C3 and joint and combined operations. Several factors contributed to the overwhelming U.S. C3 success during that war, and the Goldwater-Nichols Department of

Defense Reorganization Act of 1986 was not the least of the contributors. This act, with its emphasis on jointness, gave the Commander-in-Chief, U.S. Central Command (USCinCCent), General H. Norman Schwarzkopf, "powerful new team-building authorities." (Cushman, 1992, p. 77) Among his newly acquired powers were "authoritative direction over all aspects of military operations...prescribing the chain of command ...organizing (subordinate) commands and forces as he considers necessary...assigning command functions to subordinate commanders" and more. (Public Law 99-433, Section 164 (c))

According to General Schwarzkopf,

> Goldwater-Nichols established very, very clear lines of command authority and responsibilities over subordinate commanders, and that meant a much more effective fighting force in the Gulf. The lines of authority were clear, the lines of responsibility were clear, and we just did not have any problem in that area -- none whatsoever. (OSD Lessons Learned, 1992, p. K-5)

With his command authority, he "was able to pull together his U.S. forces as tightly as he wished." (Cushman, 1992, p. 77) With his coordinating authority, he built a framework for combined operations with Arab and other coalition forces:

> Owning by far the largest coalition contingent, he could...persuade other nations' smaller contingents to join his team in the interest of accomplishing the common mission. (Cushman, 1992, p. 77)

Before discussing how various U.S. military services contributed to mission accomplishment, the basic framework and different chains of command will be presented. General Schwarzkopf's U.S. forces were arranged by components, as shown in Figure 5:

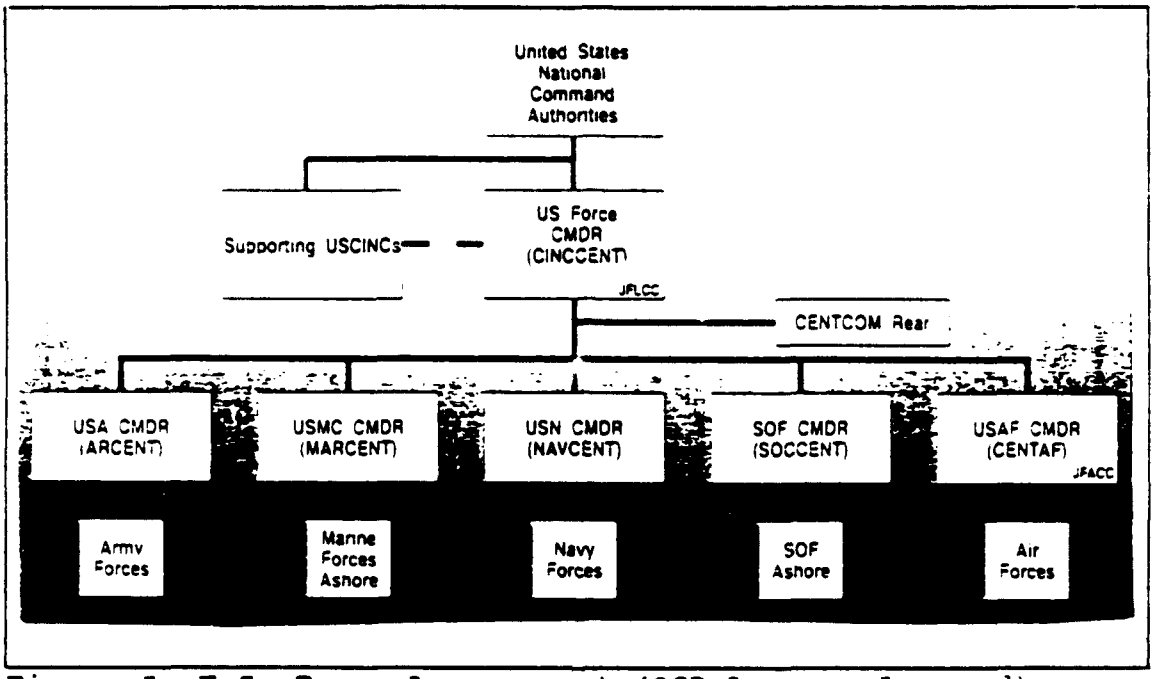

Figure 5: U.S. Force Arrangement (OSD Lessons Learned)

The coalition's forces were commanded by the Strategic National Committee (SNC), chaired by both General Schwarzkopf and the Saudi defense minister, Prince Lieutenant General Khalid bin Sultan. (Young, 1992, p. 33) Under the SNC, were the two component command committees. This multinational chain of command is presented in Figure 6.

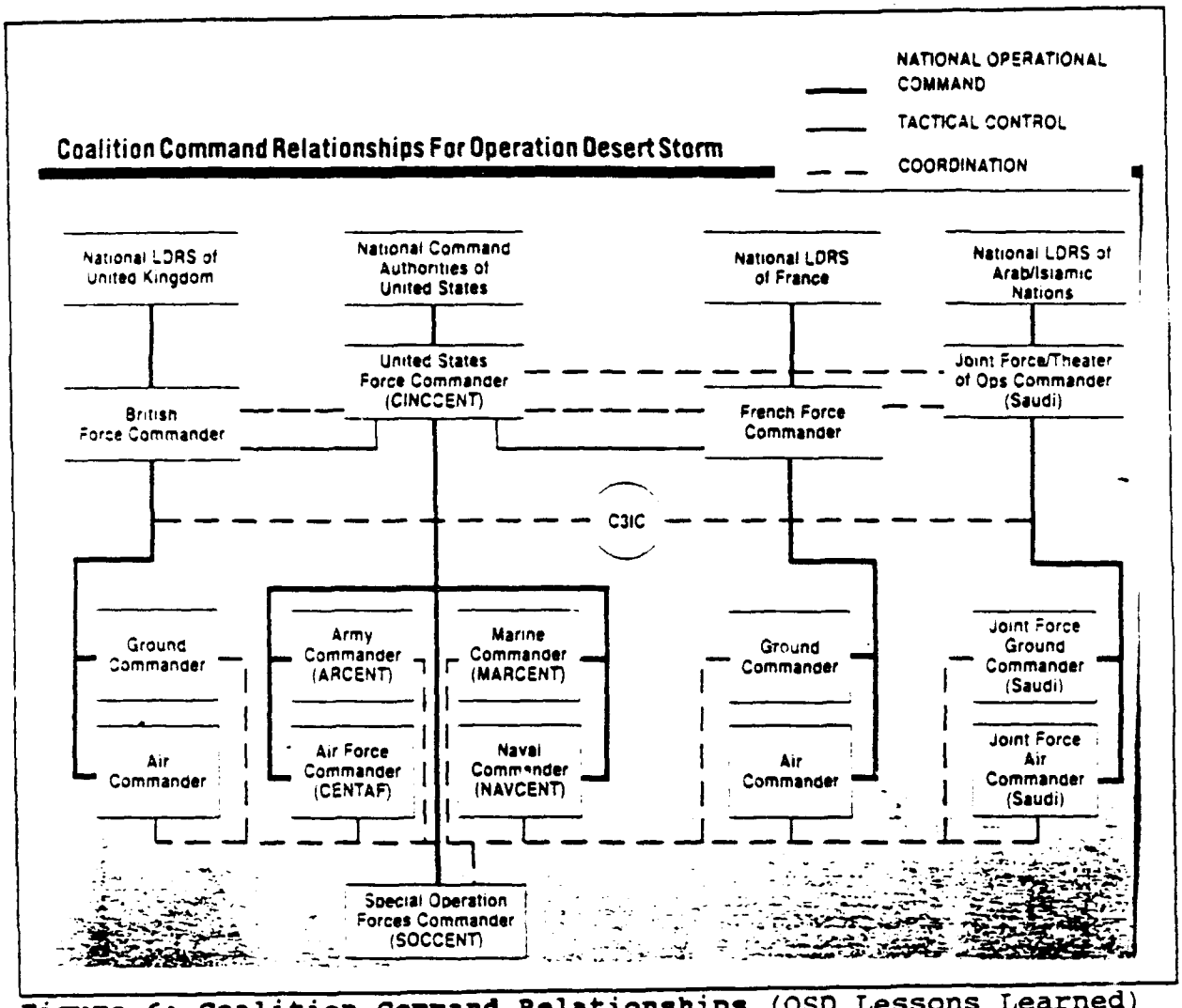

Figure 6: Coalition Command Relationships (OSD Lessons Learned)

As can be seen from the above diagram, the British and French Force Commanders fell under tactical control of the U.S. Force Commander, General Schwarzkopf. There were no lines of U.S. control over the Joint Force/Theater of Operations (Saudi) Commander. Hence, there were two major

command structures: the American coalition (consisting not only of U.S., British, and French forces, but Italian and Canadian forces as well) and the Arab/Islamic (JFC) coalition. Coordination, accomplished through the C3IC (Coalition Coordination, Communication, and Integration Center), was the link between the two Force Commanders. Allied coordination and the C3IC will be discussed shortly. First, each of the warfare areas--air, naval, and land (including the Army and the Marine Corps)--will be addressed.

Central to air warfare is the air tasking order (ATO), which is written daily and outlines in detail the whats, whens, and wherefores of each aircraft's mission. The general concept was no different during the Gulf War, except that the ATO became a multi-service, multinational document. This added multiplicity made the ATO much more complex, both in terms of writing and distributing. In spite of the added complexity and difficulty, the multinational air campaign was "stunningly initiated and by all accounts well managed." (Cushman, 1992, p. 77) This success stemmed from a vital C3 component: command. Specifically, the success of the air campaign resulted "directly from Goldwater-Nichols's authorities and General Schwarzkopf's delegating approach." (Cushman, 1992, p.77)

Under the Goldwater-Nichols Act, a U.S. joint force commander can designate a single air authority -- the joint force air component commander (JFACC) -- for the "planning, coordination, allocation and tasking" of all tactical air, regardless of service. (Joint Pub 1-02, 1992, p. 197) General Schwarzkopf made the commander of CentAF his JFACC. To ensure cooperation and coordination, the JFACC's tactical air control centers were manned by representatives of coalition air forces. (Cushman, 1992, p. 77)

(The fact that the U.S. has conducted many training exercises in Saudi Arabia, coupled with the fact that Saudis use U.S. systems such as F-15 and F-16 fighter aircraft, E-3A AWACS, and ground-based aerial surveillance radars, certainly aided in cooperation and coordination. Furthermore, according to General Cassity, the joint warfighters course with foreign student participants at Maxwell Air Force Base strengthened C3 during the Gulf War. (Signal, 1992, p. 123))

In the naval arena, such strict planning as imposed by the ATO is not considered essential. However,

those ships with aircraft participating in air operations came under the tasking control of the JFACC[1].

USNavCent (Commander Seventh Fleet) was directed to command U.S. naval forces and coordinate with other nations' naval forces. This coordination with allies was not a new concept, since the U.S. Navy already had been participating in multinational operations in the Arabian Gulf during the reflagging and escort of Kuwaiti tankers from 1987 up to 1990 in Operation Earnest Will. In fact, these earlier operations "had made the U.S. Navy adept at coordinating multinational sea operations in the Persian Gulf without having actual operational control over other nations' combatants." (Cushman, 1992, p. 78)

General Schwarzkopf's management of air/land operations demonstrated his flexibility and superb leadership skills. He did not force a joint/combined land operation. Instead, he kept the three groups that comprised the air/land forces -- U.S. Army (Third Army), U.S. Marine Corps (I MEF), and other forces (British, French, and Arab) -- separate. General Schwarzkopf recognized that these

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[1]One problem area here was the transmission of the ATO to the aircraft carriers. Due to the lack of naval SHF communications on board to permit integration with USAF systems, the ATO was flown aboard daily by courier aircraft -- a clumsy process in view of today's technology. This shortcoming is being addressed, and all aircraft carriers should be equipped with SHF by 1995.

forces were each too different in their operating procedures and standards to have an effective union. In this case, the sum was worth less than its parts.

One source reported that the Saudi Army did not even have a C2 structure above the brigade level. Therefore, the battlefield was divided and each nation was assigned its own territory of responsibility. (Young, 1992, pp. 33-34) Even though the forces were technically operating separately, General Schwarzkopf expected a certain amount of coordination between the different forces. Unity of effort without unity of command was enhanced by the fact that "British, French, Saudi, Egyptian, and Syrian divisions and brigades follow the U.S. Army's organizational pattern closely." (Cushman, 1992, p. 80) The importance of an inherent component of C3--organization--was clearly manifested in the management of the air/land operations during the Gulf War.

Those functions which crossed all air/land lines, such as intelligence, electronic warfare, and logistics, were coordinated at CinCCent's level. (Cushman, 1992, p. 80) This centralization of support operations reduced redundancy, ensured that all groups received the same information, and freed the operators to concentrate on warfighting.

General Schwarzkopf possessed authority heretofore not granted to an area commander. His authority as the Joint Task Force (JTF) commander was unquestioned; the element of command, that is, "Who is really in command?" was clear. His insight and flexibility in the management and control of his subordinate forces ensured appropriate levels of coordination-- from strict to loose. Though he effectively combined five forces into one cohesive force, he allowed for separateness when it was in the best interests of the coalition. His command structure "maintained continuity, ensured component commanders were responsible for Service missions in theater, and smoothed the transition to a wartime organization." (OSD Lessons Learned, 1992, p. K-5) The only significant change to the U.S. coalition force structure was France's coming under CinCCent's tactical control (TACON) vice the Saudi Regional Force Commander's TACON (occurring just hours before the air campaign started on 16 January); U.S. force structure remained the same. Although the Arab contingents did not come under the general's operational control, General Schwarzkopf circumvented this potential problem by linking the two forces with the C3IC. With both forces manning the C3IC, coordination was a natural result. Thus, communications not only flowed freely horizontally, between forces, but also vertically, both up and down the chain of command, due not

only to General Schwarzkopf's recognition of their importance, but also physically in large part to satellite communications. (These assets will be discussed in the following section, "Elements.")

b. Elements

(1) C3IC. The previously mentioned C3IC (Coalition Coordination, Communication, and Integration Center), established on 13 August, 1990 in Riyadh, "proved crucial to the success of Operation Desert Storm." (OSD Lessons Learned, K-25) Although the center exercised no command authority, it served as a link and conduit for coordination and intelligence sharing between the Western and Arab forces. (OSD Lessons Learned, 1992, p. K-25) The Vice Deputy Commanding General, ARCENT and the Saudi JFC jointly directed the C3IC, which was manned by American and Saudi officers alike and augmented with liaison officers from other services. Organization fell out along traditional warfighting lines: ground, air, naval, air defense, special operations, logistics, and intelligence. (OSD Lessons Learned, 1992, p. K-25)

(2) Communications. Communications--the third "C" in C3, the vital element of C2--was key to the success of Operation Desert Storm. The largest communications network ever established in history maintained a 98 percent readiness rate and provided connectivity with the NCA,

USCENTCOM, other coalition forces, and other U.S. sustaining bases and subordinated component elements. (OSD Lessons Learned, 1992, p. K-25) In fact, according to Lieutenant General James S. Cassity, J-6, Joint Staff, "The services put more electronics communications connectivity into the Gulf in 90 days than we put in Europe in 40 years." (OSD Lessons Learned, 1992, p. K-26) By November, there was more strategic connectivity in the area of operations than in Europe. (OSD Lessons Learned, 1992, p. K-28)

The DOD communications systems that were employed included the following: Automatic Digital Network (AUTODIN), Defense Communications Systems (DCS), Defense Data Network (DDN), Defense Satellite Communications Systems (DSCS), Defense Switched Network (DSN), Joint Tactical Communications Program (includes TRI-TAC), Ultra High Frequency Satellite Communications (UHF SATCOM), and World-Wide Military Command and Control System (WWMCCS). (OSD Lessons Learned, K-29) Each of these systems could be a dissertation in itself and thus will not be discussed in-depth in this thesis. However, the importance of satellite communications must be emphasized.

> Military satellite communications (MILSATCOM) formed the C2 backbone and highlighted the growing dependence on MILSATCOM to provide operational flexibility tailored to prioritized C2 needs. (OSD Lessons Learned, p. K-31)

The above statement does not even take into account the Scud warnings provided by various infrared sensors.

In the combined arena, C3 was enhanced by the U.S. sharing of encryption systems--including STU-IIs and STU-IIIs--and satellite resources with coalition forces. Also, USCENTCOM communications staffs helped the Saudis to purchase secure HF radios which enabled them to communicate with the front line. (OSD Lessons Learned, 1992, p. K-30)

(3) Models. Modeling is an often overlooked, yet important, element of C3. During Operation Desert Storm, a particularly useful model, C3ISIM, developed by Major Frederic T. Case (USAF) and others, was utilized. The objective of the model was to assist in the detailed design of aircraft strikes, to keep allied aircraft losses to a minimum. The model, which was quite intricate, proved to be a success--and, perhaps even more importantly--demonstrated that combat simulation models do have potential for effective use in an operational environment. (Case, 1991, pp. 1-15)

(4) Miscellaneous. Several of the C3 systems previously mentioned--GPS, JSTARS, TRI-TAC--were used with great success during the Gulf War. Two other systems, both of them Air Force systems, proved their worth during Operation Desert Storm. The first system, a third-generation airborne battlefield C2 center, provided pilots with current

targeting and threat information and acted as a communication link between pilots and ground operations centers. (Signal, 1992, p. 126) The second system, a deployable air situation display, delivered an air picture for commanders to better manage the air battle. The system also played a major role in search and rescue for downed pilots. (Signal, 1992, p. 126)

c. Lessons Learned

Of all the lessons learned, perhaps the most applicable to C3 was the confirmation of C3's importance in a wartime environment. C3 must exist for forces to have their greatest effect. C3 does not just happen, especially when different services and countries are involved. Since C3 is so complex and entails so many elements, to establish an ad hoc C3 system and C3 takes time. It is no simple task. Without the long lead time--nearly half a year--to prepare and set up the C3 structure in the Persian Gulf, it is unlikely the success would have been as overwhelming as it was. Fortunately for the U.S.-led coalition, Iraq made no preemptive attacks to disrupt the coalition's force and C3 buildup.

Fundamental to the accomplishment of effective C3 is interoperability, both joint and combined. Efforts have been significantly increased towards the goal of

interoperability at all levels. Two of these efforts--Copernicus and C4I for the Warrior--will now be addressed.

4. Copernicus

Historically, the U.S. Navy has not been on the cutting edge of communications technology. That noteworthy position has traditionally been accorded to the U.S. Air Force. In fact, the Navy, with its own army (Marine Corps) and air force (Navy air) has traditionally prided itself on its separateness and been the least joint oriented of all the services. With decreasing DOD budgets and Goldwater-Nichols, that USN stance has been changing. But the "damage" done years before cannot be quickly alleviated. Evolution is the "buzzword," as will be demonstrated in the following section on "C4I for the Warrior."

As mentioned earlier, due to lack of SHF processors, the Navy, apart from its flagships, was unable to electronically receive critical messages, including the ATO, during the Gulf War. These limitations were known before Desert Storm; the War only served to highlight further how far behind the Navy was.

In October 1990, Vice Admiral Jerry O. Tuttle, Director of Space and Electronic Warfare (SEW) in OPNAV, introduced Copernicus, a new approach to managing C3, or in more up-to-date terms, C4I. Named after the Polish astronomer who demonstrated that the earth revolves around

the sun, Copernicus shifts the center of the C4I universe by, according to Admiral Tuttle, "shifting the Navy away from technology for its own sake" in the C4I area to "technology for the sake of operations." (Howard, 1992, p. 20) Also, the operator vice "staffer" is the new center for the Copernicus system. This same basic idea -- of supporting the warrior directly -- underlies C4I for the Warrior.

The Copernicus architecture is based on four pillars, or levels of C4I system integration, and they are as follows[2]:

a. ***GLOBIXS***

GLOBIXS: A series of eight, theater-wide Global Information Exchange Systems which will acquire, standardize, and concentrate shore-based sensor and other data, such as OTH radars, for Navy and joint uses. GLOBIXS will provide broad information management--the heart of C3--by acting as shore-based gateways for communication to deployed ships. Instead of the old text format, new mediums, such as voice, video imagery, and digital data are envisioned.

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[2]The following information was derived from two sources: a Proceedings article by LCDR Michael S. Loescher, Special Assistant for Cryptology to the Director, SEW, and an article which appeared in the February 1992 issue of Sea Power.

b. CCC

CCC: A CinC Command Complex, linking the GLOBIXS to shore-based command centers via a local area network (LAN), allowing data files transfer from one computer to another throughout the network -- including those computers aboard aircraft carriers.

c. TADIXS

TADIXS: A series of 14 Tactical Data Exchange Systems that exchange non-organic sensor data from the GLOBIXS with organic sensor data afloat. The CCC is linked to TADIXS networks.

d. TCC

TCC: The TADIXS nets are integrated with Tactical Command Centers aboard flagships and aircraft carriers. The TCCs provide tactical displays, integrated information management, and the tactical communications connectivity to support all U.S. Navy platforms -- ships, subs, and tactical aircraft -- assigned to specific warfighting missions. (Loescher, 86-93; Howard, 19-20)

The broader vision is for the CCC and TCCs to connect the Navy to the other services and allies, both at the tactical and theater operational levels.

The current status of Copernicus is not clear. It is undergoing changes and studies; its name may soon no longer be Copernicus. In fact, it is possible that J-6 will

incorporate Copernicus into its long-range, global multi-service-wide C3 architecture. Whatever form or name it takes, the fact remains that Admiral Tuttle's goal of a giant interoperable database from which all services--and some allies--can draw is still being pursued. Unfortunately, defense budget trends do not bode well for the program, or at least its short-term realization.

5. C4I for the Warrior (C4IFTW)

C4IFTW is the brainchild of Vice Admiral Macke, J-6, Joint Chiefs of Staff. In a February 1992 Executive Summary entitled C4I For The Warrior, VADM Macke states that the concept for the system is the provision of:

> ...a fused, real time, ground truth picture of the warrior's battle space and the ability to order, respond and coordinate horizontally and vertically to the degree necessary to prosecute his warfighting mission in the battle space. (Macke, 1992, p. 1)

In other words, his goal is the name of his project: C4I for the warrior. An underlying and fundamental aspect of this goal is interoperability of C4I systems. VADM Macke proposes a top-down approach, establishing standards for information interchange called joint interoperability standards. These standards will be applied to all forms of communications, including voice, data, imagery, text, and video. This standardization will provide a short-term fix. In the long term, VADM Macke envisions a complete C4I system architecture, perhaps much like the Copernicus architecture,

that will enable "existing systems to evolve in an affordable program toward a single interoperable system," (Macke, 1992, p. 1)

Currently, the various services' C4I architectures are "stovepipe" systems; that is, they are service specific and not necessarily interoperable with other services' systems. Figure 7 illustrates this phenomena:

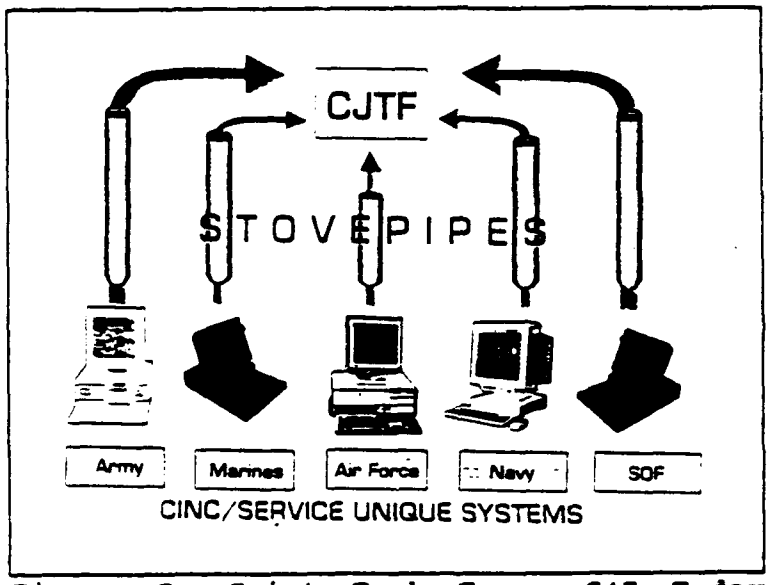

Figure 7: Joint Task Force C4I Today (Source: Macke)

The joint interoperable architecture VADM Macke envisions for the future is shown in Figure 8.

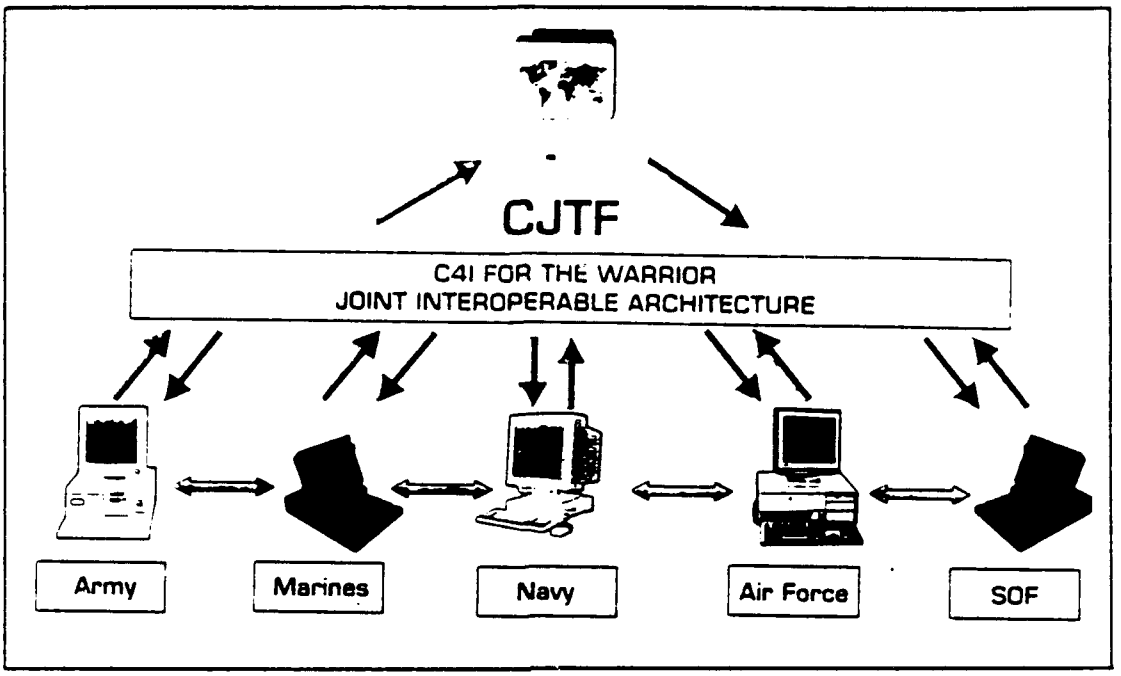

Figure 8: Joint Task Force C4I "Tomorrow" (Source: Macke)

As mentioned earlier, "evolution" is the buzzword. Such a lofty plan must be evolutionary to be affordable and thus acceptable. The interim fix between now and achieving a joint interoperable architecture in the longer term future is the use of translators between stovepipe systems. Their viability already has been demonstrated during the Gulf War.

C. U.S. C3 SUMMARY

There is a tremendous amount of information available with regard to U.S. C3 and C3 systems. C3 truly is right now the "hot topic" in military circles, especially among

the higher echelons. It is receiving unprecedented attention and emphasis. In the post-Gulf War literature discussing C3, topics range from communications systems to intelligence to computers to command structures. In other words, in the United States, C3 still means many things to many different people. This ambiguity--which is not necessarily deleterious to U.S. C3 interests--does not appear to be the case in Great Britain and France.

D. BRITISH AND FRENCH PERCEPTIONS OF C3: AN OVERVIEW

What follows is a discussion of British and French C3 in terms of how their perception of what C3 means to them is shaped by their individual strategic cultures. It is interesting to note the apparently different perceptions Britain has from France with respect to C3. This author's research revealed that when British officials discuss C3, its context is in command structures and communications systems. The French, on the other hand, tend to associate C3 with space and intelligence issues--high technology areas. These ideas will be expanded in the British and French sections which follow.

E. BRITISH AND FRENCH C3 IN THE GULF WAR

Neither the British nor the French have anywhere near the extensive C3 systems and networks the U.S. has established. Their defense budgets are significantly

smaller, and they have been able to rely on the U.S. for much C3 support. Although they were able to provide some C3 support during the Gulf War -- in the form of Skynet (British) and RITA (French) -- just how dependent these two countries actually are on their bigger ally, the U.S., was demonstrated during that crisis.

F. BRITISH STRATEGIC CULTURE

To better understand the British perspective of C3, a synopsis of applicable points of their strategic culture is warranted[3].

British defense decision-making is highly-centralized, with critical choices made by a small elite group. The Prime Minister leads the majority party or coalition in the House of Commons, which does not have the autonomy of the U.S. Congress. Nor does Britain have a Supreme Court on the U.S. model to provide for judicial review to evaluate the constitutionality of Acts of Parliament. The House of Lords is the highest court of appeal. Because the British are accustomed to this type of "command," they have no problem turning over control of their forces to a supreme allied commander in a joint/combined campaign. In fact, they

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[3]Much of the following points were gleaned from the NPS NS4030 class discussions on Great Britain.

recognize the value in that action. They are not swayed so much by public opinion as are the French.

Britons, unlike the French, do not embrace the technological revolution. Whereas the French quickly identified domestic high-tech deficiencies in their analysis of Gulf War operations, the British were pleased with their technological performance:

> The outstanding success of the military operation to liberate Kuwait--and the contribution made by British Forces to this success--provided a clear demonstration of the effectiveness of defence capabilities built up over many years. Some adjustments will be made as a result of Operation GRANBY but no requirement was identified which demands a major change in direction. (Statement on Defence Estimates, 1992, p. 79)

G. BRITISH C3

Overall, the British were satisfied with their performance and capabilities during the Gulf War. They responded quickly and just as rapidly integrated themselves into the coalition under CENTCOM's leadership. They recognized the importance of a clear command structure. In fact, General Sir Peter de la Billiere, Commander of British Forces Middle East, declares:

> The problem facing the British was how to integrate our forces and exercise command and control within these arrangements. The solution, and I believe the correct one, was that although British Forces in the Gulf would remain at all times under ultimate national command, I was given the authority to place them, when required, under the tactical control of the U.S. for specific operations. This, I believe, was of fundamental importance to the role we were able to play in the coalition. More

> than anything else, this...gave me unrestricted access to the U.S. planning machinery and placed me in a pivotal position in determining the use of British Forces. (Command In War, 1992, p. 12)

General Billiere recognized the "quid pro quo" position that he was in and made the best of it.

One of their most important lessons learned from Operation Granby, as they call it, was that the U.K. will not be involved in major hostilities or out-of-area operations without allied support. (Preliminary Lessons of Operation Granby, 1991, p. ix) The British see no reason to significantly enhance their C3 systems given that they will not operate independently in a major crisis. Instead, they will probably seek to strengthen their ties to the U.S. The British have long enjoyed a "special relationship" with the United States with respect to sharing information in intelligence, naval matters, and nuclear weapons. A credible goal in their own self-interest would be to seek to expand their "special relationship" to include U.S. C3 systems as much as possible.

H. FRENCH STRATEGIC CULTURE

Just as in the British case, a review of French strategic culture is warranted here[4]. The French pride

[4]As in the case with Great Britain, many of the following points were drawn from the NS4030 class discussions on France.

themselves on their independence and maximum flexibility. It was partly for these reasons that they sought a special status in NATO. Another reason they desired special status is that they do not at all relish the idea of forsaking command. Their policy holds that if they are participating with NATO, they should retain command of their own forces. Hence, they maintain maximum flexibility and independence. The French contend that relinquishing command is not in their best interests and could even be counter to their own interests. This adverse view of "command subordination" manifested itself during the Gulf War, when the French relinquished command and fell under CENTCOM's operational control "for a specific period and [for] predetermined missions" only hours before the outbreak of hostilities on 16 January (Young, 1992, p. 33). Even this "late entry" carried stipulations with it. Perceptions and impressions are extremely important to the French, both domestically and internationally. To be perceived as a lesser power that surrenders command is to lose prestige as a world leader and power.

As mentioned earlier, flexibility is a key component of French strategic culture. Closely related to that flexibility is the idea of ambiguity. The French enjoy keeping the world guessing as to their intentions; they remain flexible if their intentions are unknown or unclear.

(Esteve, 1983, pp. 19-22) Thus, the French are much more secretive than Americans in general. An exception to this assertion is in their policy regarding satellites, which will be discussed in the following section.

I. FRENCH C3

Considering the foregoing deliberation, it is rather easy to see why the French do not perceive C3 in terms of command structures. Those complicated structures simply do not apply to them. Theoretically, they only have themselves to worry about operationally, since they are not unambiguously committed to combining forces with NATO.

As was stated earlier, the French appear to read "C3" as "satellites." Satellite contributions to C3 cannot be denied. In fact, their importance as an element of C3 has already been stressed twice in the course of this case study. However, they are just that: an element of C3, not C3 itself. The following illustrative example may demonstrate the idea of French obsession with satellites. In an interview with a French Navy Captain (who was extremely helpful, open and cordial), this author asked about French C3. What followed was an extensive--and interesting--discussion on the French Syracuse I and II and Helios satellites and, to a lesser degree, the Spot system.

This discussion is noted for two reasons. First, it anecdotally demonstrates the idea of the French preoccupation with satellites with respect to C3. The second reason is that it reveals an uncharacteristic French openness with respect to systems which Americans might consider classified. This French Navy Captain is not unique in his candid discussions of French satellite systems. Information can be found quite easily in open literature. Again, this uncharacteristic straightforwardness seems to contradict some elements of French strategic culture.

Perhaps this openness can be better understood if one places satellites in the same context in which nuclear weapons were prior to the end of the Cold War. Just as the French then proclaimed the importance of nuclear deterrence, they now assert the value of information deterrence, or deterrence through information. And this "dissuasion par l'information" can only be realistically attained through satellites. So why keep them secret? They are the method by which the French can achieve their new form of deterrence--which implies strength and power--and they must be heralded as such.

Another explanation for the openness could be that the French, who have never been entirely comfortable with the idea of intelligence collecting--in fact, their word, "renseignement," translates literally to "information"--

(Yost, 1992, p. 37) are somehow justifying their actions of intelligence collecting by not being covert.

France's most important lesson from the Gulf War was the discovery of French intelligence inadequacies. (Yost, 1992, p. 33) According to Defense Minister Pierre Joxe,

> The weakness of these means prevented us from having the necessary information in an autonomous and complete fashion. Without allied intelligence, [which was] American, we were almost blind. (Yost, 1992, p. 33)

This echoes a similar sentiment voiced years earlier by Raymond Tourrain, when he says that without allied systems, including AWACS, "we would be perfectly blind." (Yost, 1984, p. 49) The AWACS problem has since been solved, but the outlook for autonomous French intelligence provided by their own satellites does not look as promising. They have been pushing for joint Western European space programs, but they remain the overwhelming contributor.

Proper perspective is gained when one compares the French space budget to the U.S. space budget: approximately $1.6 billion versus approximately $30 billion, or roughly five percent of the U.S. space budget. (NS 4030 class lecture notes) France has the desire for a more autonomous space-based intelligence system, but it lacks the means to make that goal a reality. In spite of their lofty goals,

the French will probably continue to rely heavily on their allies, especially the United States, to support their intelligence requirements.

J. CONCLUDING REMARKS

> One of the least controversial things that can be said about command and control is that it is controversial, poorly understood, and subject to wildly different interpretations. The term can mean almost everything from military computers to the art of generalship: whatever the user wishes it to mean. (Orr, 1983, p. 23)

How individuals perceive C3 is dependent upon their perspectives; how nations perceive C3 is dependent upon their strategic cultures.

Americans, open-minded and generally always "thinking big," perceive C3 extremely broadly and in a multitude of contexts. Furthermore, just as the country is expansive, so are its C3 systems. Like the French, Americans appreciate technological advances. Future U.S. C3 improvement plans will incorporate this advanced technology in an evolutionary manner. There are no quick fixes.

Britons, in correspondence to their country's size, think much "smaller" in terms of C3 issues, even though they do take a global view of international politics. They recognize their declining role as a world military leader and accept that position. Their strength lies in maintaining their "special relationship" with their better-endowed trans-oceanic cousin, the United States.

The French want to maintain their self-proclaimed status as the third military power in the world. Their tendency to carry the "military logic of an era to extremes" (NS 4030 class notes) in the past manifested itself in the Maginot Line and later in nuclear strategy. In the present high-technology age, the French are focusing on space-based intelligence systems. This new direction places the French in a dilemma. How can they pursue goals which will require allied--most particularly, U.S.--support, and at the same time maintain their flexibility and independence?

VI. CASE STUDY: AIRCREW COORDINATION TRAINING

A. BACKGROUND

Effective coalition C3 results from practiced teamwork. This same idea of practiced teamwork has been applied to naval aircrew "teams" in an aircraft. To enhance teambuilding among aircrewmen, the U.S. Navy and Marine Corps have mandated that all aircrewmen undergo Aircrew Coordination Training (ACT).

ACT for naval aircrewmen was introduced into naval aviation in the late 1980's. ACT evolved from a program developed for the civilian airline industry. More than a safety course, the ACT program is intended to improve mission effectiveness of all aviation communities "by enhancing crew coordination through increased awareness of the associated behavioral skills." These skills include situational awareness, communication, mission analysis and briefing, decision making, leadership, assertiveness, and adaptability and flexibility. (OPNAVINST 1542 Draft, 1993, pp. 1-2) For the purposes of this case study, only the communication aspect of the course will be discussed.

Per OPNAV Instruction 1542 draft, all aircrew members in a flying status will be required to have attended an approved ACT course prior to December 1993. Further, annual

refresher training is required. All training will be logged in individual Naval Air Training and Operating Procedures Standardization (NATOPS) Flight Personnel Training/Qualifications Jackets. These requirements will be an inspection item in NATOPS command inspections. (OPNAVINST 1542 Draft, 1993, pp. 3-4)

B. ACT and Aircrew Coordination

Aircrew coordination itself is not limited to intercockpit coordination. It also affects pilot-to-controller and lead-to-wingman communications. (OPNAVINST 3710.7P, 1992, p. 3-9) However, the main focus of this case study will be intercockpit coordination.

OPNAV Instruction 3710.7P, NATOPS General Flight and Operating Instructions, dated 1 December 1992, lists the key components of aircrew coordination as chain of command/leadership; communication; proficiency; and situational awareness. All four will be briefly reviewed, with a focus towards those elements addressing communication and training and exercises.

1. Chain of Command/Leadership

Although the designated aircraft commander is ultimately responsible, crewmembers are responsible to support him with "timely recommendations and backup as

directed." (OPNAVINST 3710.1P, 1992, p. 3-9) Inherent in "recommendations and backup" is clear, concise communication.

2. Communication

The complete section relating to communication is quoted verbatim below. Several important concepts are included in the following, including open communication, understanding, and barriers to effective communication:

> Effective aircrew communication skills ensure timely transfer and assimilation of accurate information. Open, professional communication that avoids defensiveness and encourages accurate understanding of the intended message is critical to information flow in the cockpit. Aviators should be aware of the basic sociological, psychological, and environmental barriers to communication.(OPNAVINST 3710.7P, 1992, p. 3-9)

Most, if not all, U.S. naval aviators speak fluent English, so language itself is not a barrier to intercockpit communication. The impediments to effective communication, rather, are those listed above: "sociological, psychological, and environmental." If these barriers exist for "same culture" U.S. Navy pilots--members of the same squadron--and it is recognized that these pilots must consciously practice overcoming these barriers, then what conclusion can be drawn with regard to U.S. forces working with multicultural allied forces? Emphasis must likewise be given to consciously overcoming the sociological,

psychological, and environmental barriers between coalition partners and combined exercise/operations participants.

If there are communications difficulties even within a select, unique segment of the U.S. Navy--naval aviation[1]--surely there are communications problems in coalition/combined forces.

3. Proficiency

Practice, both of sharing tasks and reacting to different situations, is the cornerstone of proficiency. (OPNAVINST 3710.7P, 1992, p. 3-9) What is good for U.S. naval aircrewmen is also good for U.S. naval forces working with allied forces. Practice might not always make perfect, but it certainly helps to foster improvement. Practice, in the form of exercises, reveals shortfalls and spawns correction of, or at least addressing of, those shortfalls. Practice also reinforces those procedures which do work and results in the aforementioned proficiency.

4. Situational Awareness

Good communication is one of the factors mentioned for stimulating awareness. (OPNAVINST 3710.7P, 1992, p. 3-9)

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[1]There have no doubt been communications difficulties, in the form of either miscommunication or lack of communication, within naval aviation. The ACT program teaches that 50-80 percent of all aircraft accidents are due to aircrew error; that is, they are preventable, in many cases, with effective aircrew communication and coordination.

One of the manifestations of loss of aircrew coordination listed in OPNAVINST 3710.7P is absence of communication. This author asserts that absence of communication is not only a manifestation of loss of aircrew coordination, but a prime cause of it.

C. ACT Syllabus

Section 4 of the ACT training guide is "Aircrew Communications."[2] The stated objectives are to recognize the impact of effective and ineffective communications and to develop methods to achieve effective communications. A prime contributor to ineffective communication is its apparent simplicity. Communications is taken for granted by most people. It is viewed as a "simple, natural process"; hence not enough effort is put forth to ensure the best communications possible.

Three types, or levels, of communications are featured: poor communications, good communications, and effective communications.

Poor communications results when the message is not received and results from: lack of assertiveness; junior-senior relationships; different emotional makeup of crew

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[2]That which follows comes from an ACT syllabus used by Helicopter Combat Support Squadron Three (HC-3), the Fleet Replacement Squadron for CH-46 helicopters located at Naval Air Station, North Island, California.

members; unfamiliarity with other crew members; different experience levels; and lack of confidence in self or others. Poor communications is indicated by confusion and bad feelings.

Problems can still occur with good communications, e.g., when the message is received accurately, but not acted on. The two-way process of communications is thus only partially fulfilled.

Effective communications is marked by the receiver's responding with the desired information or action.

Obviously, effective communications is the goal. However, there are several barriers to effective communication, some of which are poor communication skills; language, with ambiguous wording, technical terminology or jargon, and non-standard phraseology all contributing; and complexity. Also, personal filters, shaped by one's life experience, affect communications, as do prejudices and biases, attitudes, and perceptual differences. These same barriers, which affect U.S. Navy aircrew communications, are magnified in a coalition by virtue of its multicultural underpinnings.

Finally, the section on communications concludes with effective crew communications. Studies have shown that effective crews "plan more, openly discuss options and alternatives, and do contingency planning." They also have

"frequent, direct, open and concise communication." (ACT Instructor Guide, Navy 91-1B, p. 4-7) When conducting operations involving units of multiple services and countries, only consistent interactions with one another will establish a relationship where combined planning and open discussion of options and alternatives are possible. Just as effective naval aircrews have "frequent, direct, open and concise communication," so must effective naval coalitions. To be effective, a coalition must become a team, much like an aircraft's crew.

D. CONCLUSION

To reiterate, the purpose of ACT is to improve mission effectiveness of all aviation communities "by enhancing crew coordination through increased awareness of the associated behavioral skills." (OPNAVINST 1542 Draft, 1993, p. 1) The same goal should be extended to combined operations. Although a course similar to ACT is not necessarily appropriate for allied forces, many of the benefits accrued by ACT can be realized by recognizing the communication barriers highlighted in the ACT program; working to overcome them; and then practicing those techniques which do in fact work, in multilateral, multicultural combined exercises and operations.

Not only is communication improved through such exercises and operations, but important relationships are fostered. The following description of joint combat operations by RAF and Soviet pilots at the Soviet-German front during World War II[3] illustrates the trust and confidence that evolves from training and operating together:

> ...British and Soviet pilots attacked the enemy in a common flight formation. Only pilots know what a good partner means in combat. Only in air combat is success so dependant on confidence in a friend, on his skills and bravery, and on his readiness to come to your rescue. Such confidence existed in the air-to-air fighting and it was reinforced by mutual help.... (Korol'kov[4], 1992, p. 146)

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[3]These operations occurred after these two nations' pilots had trained and flown together extensively.

[4]Colonel-General of Aviation Boris Fedorovich Korol'kov was Commandant of the Gagarin Air Force Academy, Moscow.

VII. ANALYSIS

A. THE VALUE OF C3

The relationship between C3 and military effectiveness is neither widely understood nor widely appreciated (Stares, 1991, p. 18). Indeed, military effectiveness is frequently represented as a cost-exchange ratio, whether it be in terms of weaponry or manpower. Numbers are the sought after measures of military effectiveness. Exactly where C3 fits in is not numerically clear. However, author Paul Stares avers that the relationship between C3 and military effectiveness is "blindingly simple":

> Command systems enable purposeful military activity or, put differently, the matching of means to desired ends. Without some way to direct, coordinate, and control military operations, the achievement of objectives--which is the ultimate measure of effectiveness--simply would not be possible. (Stares, 1991, p. 18)

C3 contributes to the overriding MOE: mission accomplishment. Its contribution "derives from the use made of its basic commodity--information." (Stares, 1991, p. 19) The effect of information or lack of it is not easily measured, but most would agree that information is fundamentally important in any military scenario.

Although one cannot quantify C3 in the same terms that weapons can be quantified, C3 is certainly a contributor and

force multiplier. Obviously, as force levels decrease, the need for greater efficiency increases, and it is wise to look to C3 as a viable force multiplier. Improving a forces's C3 system is perhaps one of the best ways to "lower peacetime military readiness and still remain prepared for unexpected contingencies." (Stares, 1991, p. 216)

The human factor--the sociological dimension--must not be overlooked in the quest for improved C3; C3 systems, however well constructed and organized, "can function only as well as the people who use them." (Stares, 1991, p. 64) People are crucial to making C3 work.

With the increasing reach of military forces both in terms of speed and weaponry, there has been a reduction in time available for military decisionmakers to respond to events. Therefore, C3 must function more quickly--like clockwork--if those decisionmakers are to stay apace of and respond to fast-breaking developments. (Stares, 1991, p. 48)

B. ACHIEVING EFFECTIVE C3

How does one achieve optimal C3? By knowing one's force. In a world of coalition operations, that could be a difficult feat. But it is possible. This issue is addressed below in three major categories: the sociological aspect of C3; combined exercises; and relationship building.

1. Beyond Technology: The Sociological Aspect

Dr. Ragnhild Sohlberg, in his banquet address at the Armed Forces Communications and Electronics Association (AFCEA) Oslo Symposium in April 1989, articulated the overwhelming infatuation with communication technology:

> [L]ittle attention has been given to communication per se. The emphasis has rather been on electronics, both hardware and software which certainly are essential and necessary....But this is not sufficient. The overriding goal is to communicate information--by whatever means, electronics being one. But electronics is tangible. It can be touched. It has real substance. Maybe that is why most time and money is spent on this. Communication, on the other hand, is synonymous with human relations. It is intangible. It is a process which is not mechanical but person-centered. It is difficult to analyze. However, the success of any organization greatly depends upon the mutual understanding between the persons in the organization. Effective communication is too often an unattained goal, and breakdown leads to misunderstandings and costly mistakes. Webster's Dictionary defines it as...'a system for sending and receiving messages or information.'
>
> Given the complex nature of society, knowledge of man's communication with man becomes one of our most important needs. There must be a commitment to improve communication, and money and energy must be devoted to it. (Sohlberg, AFCEA Banquet Address, 1989)

Finally, in his analysis of communication, he discusses how communication quality is determined by how many errors creep into the message. He concludes that "this is certainly not only a technical problem." (Sohlberg, AFCEA Banquet Address, 1989)

Communications quality is manifested in more than speed, capacity, reliability, and survivability of the links: there

is overall effectiveness to be considered. Are the right people receiving the message and acting on it? Has true interoperability been achieved?

With the reality of coalition operations is the requirement for interoperability among coalition partners; specifically, C3 interoperability. The obvious solution is to buy more standard, international equipment. This fix, though often difficult to accomplish, can solve the compatibility problem within the interoperability issue. Further, C3 doctrine standardization is also a widely touted panacea. But that standardization must be practiced by forces to have an effect.

The key to interoperability are the forces--the people--themselves; interoperability goes beyond the procurement problem. By definition[1], interoperability is

> The ability of systems, units, or *forces* to *provide* services to and accept service from other systems, units or *forces* and to *use* the services so exchanged to enable them to operate effectively together.

Of note, interoperability involves forces--or people--providing and using services.

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[1]This definition appears both in JCS PUB 1 and in NATO's AAP/6)

Interoperability transcends mere equipment compatibility:

> It does not matter if some radios interoperate or some computer systems interoperate. What does matter is that *forces* interoperate, but this fact is sometimes lost in the efforts to solve all problems using technical solutions.
>
> *Services* are what matters to 'operators.' They care little about bits and bauds, nor are they enthralled with the intricacies of wave form development. What they need and deserve are services. So without meeting the operators' criteria, some technically-exquisite solution is of little use. The more subjective words *operate effectively* are also relevant only if the operators are satisfied with the results. It is not for the systems designer or the communicator to declare a success in interoperability; for if the operator does not agree that the *forces operate effectively* the interoperability equation has not been solved. (Mallion in McKnight, 1989, p. 231)

2. Exercises

> The military force's command doctrine is inculcated in peacetime training and exercises to facilitate reaction to common commands and likely scenarios. (Stares, 1991, p. 6)

Not only do combined exercises facilitate reaction and ensure smoother operations, but they accrue two additional benefits. Involving allies in exercises both tests their resolve and reinforces U.S. commitment to them.

The following military maxim has always held true and holds true today in an era of coalitions: "We must train the way we will fight!" To do just that, the U.S. should seek out and encourage allied participation in future exercises. Allied participation and support cannot be assumed in regional or global conflicts. Just as combined

warfighting is significant to U.S. warfighting strategy, so too combined exercising is equally significant to U.S. warfighting strategy:

> We must make coalition forces more effective in peacetime; it is too late to straighten things out in the midst of a crisis or war. (Wickham in McKnight, 1989, p. 116)

In a contingency situation, to prevent the contingency from becoming a major regional conflict (MRC) or a major crisis, the coalition must be able to respond quickly, decisively, credibly, and as one. Combined exercises help to achieve that credible response. They:

> ...oil the allied machinery for command and control and enable all units...to become fully acquainted with...procedures and the inevitable slight national differences in naval practice. (Pakenham, 1989, pp. 115-116)

In order to conduct combined exercises, U.S. naval forces must operate forward, in areas of potential conflict.

a. Sizing

As discussed in Chapter II, naval forces must be sized according to that forward presence role. However, it appears that U.S. naval forces are being sized primarily based on fiscal and political considerations rather than on real military need. Simply put, if money were not an issue, the U.S. military, particularly the mobile arm, the U.S. Navy, would not be downsizing. The National Security Strategy, the National Military Strategy, and "...From the

Sea"--which has its basis in the previous two--are all designed more in response to lack of fiscal resources versus lack of threat[2].

Both "...From the Sea" and the National Military Strategy, from which the White Paper is derived, increase the relative significance of forward presence and crisis response as components of U.S. military strategy. The two--forward presence and crisis response--are in the same context in the two documents, but they most certainly are not the same. As demonstrated earlier in Chapter II, they would require different sized forces. The White Paper focuses on the crisis response role to the detriment of the forward presence role. The forces "tailored" as required by national needs in "...From the Sea" might more appropriately be referred to as "trimmed" as required by national fiscal needs.

b. Costing

The additional costs of U.S. naval forces' operating forward versus staying near home port are quite small:

> Most of the costs of maintaining the Navy--including research and development, equipment acquisition and personnel pay and training--are incurred whether or not

[2]Indeed, some experts contend that the uncertainty and lack of a predictable, bipolar world makes the threat even greater and the world less stable.

> ships deploy overseas. One analysis concluded that the savings from eliminating routine forward deployments would reduce total operation and support costs by less than 3%.... (O'Rourke, 1992, p. CRS-29)

There is no valid cost argument against forward presence.

3. Relationship Building

Princess Anne, in the foreword to *Cooperation and Prosocial Behavior*, writes that

> What is true of individuals is also true of nations: we need to find ways to build international relationships based on trust and mutual understanding.
>
> In times of increasing global interdependence nations have to learn mutual respect and to commit themselves to reasoned coexistence--but this will only be the case if nations can learn to respect each other's values and needs. (Princess Anne in Hinde and Groebel, 1991, p. xiv)

As demonstrated in Chapters IV and V, appreciating coalition partners' different cultures can significantly enhance our ability to operate effectively with them. In order to fully appreciate their cultures and their cultures' impact on Navy C3, U.S. naval forces must be exposed to them--through continuing combined exercises.

C3 does not just happen. It must be continually worked at, tuned, and finessed. Just as communication does not automatically occur between two pilots in the same aircraft, it does not automatically occur between coalition partners in the same coalition. In both cases, a "comfortable" relationship must be established and fostered.

Our ability to marshal forces and coordinate their use in battle is dependent upon stable, secure relationships with those very forces (Stares, 1991, p. 18).

C. THE GULF WAR

There are many lessons to be learned from Operation Desert Storm, three of which will be discussed here. First, forward deployed forces enabled the U.S. to quickly establish a deterrent capability in theater (Final Report to Congress, 1992, p. 59). Forward deployed forces'--i.e., naval forces'--value as both a deterrent and actual capability cannot be overstated.

Second, we cannot take for granted the exceptional connectivity (98%) enjoyed during the Gulf War. We cannot afford to be lulled into a false sense of security based on our outstanding results achieved during Desert Storm. There will most likely not be the long lead time in which to establish C3, and future enemies cannnot be expected to leave vulnerable C3 facilities untouched and unjammed.

Finally, most analysts agree that Desert Storm was a four sigma war; similar circumstances will probably never be repeated. The nearly six-month unhindered preparation and C3 buildup enjoyed by coalition forces most likely will not

be the case in future crises. Instead, should deterrence fail, a rapid, decisive response by a practiced, multicultural coalition will be required.

VIII. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

C3 in general is currently receiving more high level attention than ever before. Particular emphasis is being placed on the technological facet, with efforts focusing on hardware and software to make C3 work both among services and among nations. However, regardless of the technological successes related to C3, the sociological dimension, or human element, is the part that ultimately makes C3 work. Intrinsic in the idea of the human factor is interoperability between people.

This type of interoperability does not come naturally and cannot be mandated or forced through software/hardware system standardization. It must be developed, nurtured, and sustained--through combined exercises and operations--on a continuing basis. Establishing a multi-service and/or multinational relationship is not enough. It must be maintained through ongoing associations, whether they be exercises[1] or operations.

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[1]Multinational exercises in the Arabian Gulf have increased five fold since the end of the Gulf War. There is obviously a recognized benefit of multilateral exercises. However, will this trend of increased exercises continue? With dwindling naval forces, it cannot. Personnel and operations tempo (perstempo and

Human interaction cannot truly be simulated with wargames and other types of currently available simulations[2]. Therefore, ongoing associations with future coalition partners are fundamental to successful Navy C3. And successful Navy C3 is the key to successful contingency response.

Because of its uniqueness, mobility, and flexibility, the U.S. Navy will most likely be the first military force on-scene in a crisis situation requiring a military response. As the first on-scene, naval forces will be the first to establish C3 and build C3 connectivity in the area. Hence, there is a need for effective, immediate Navy C3. Since the U.S. Navy will likely be operating as part of a coalition force, its ability to interact with coalition partners is paramount. The first on-scene naval coalition force should be capable of providing instant C3 connectivity in a contingency situation. Such a potential capability

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optempo) simply do not permit the continuing of forward deployments and combined exercises at the current level. The answer is not to change perstempo and optempo restrictions; their imposition is necessary for an optimally performing U.S. naval force. Nor is the answer to cut back on forward deployments, which contribute significantly to U.S. Navy and coalition readiness. The answer, although budget constraints would appear to preclude it, is to maintain the current naval personnel and ship level.

[2]The exception to this statement is the BFIT model, discussed in Chapter III. However, this virtual simulation is currently not available to potential coalition partners.

must be exploited to the greatest extent possible. Considering and taking into full account the sociological aspect of Navy C3 might well guarantee that vital C3 connectivity instantaneously.

In addition to its C3 enabling capability, Dr. James L. George highlights unique advantages inherent in a navy which the other services cannot duplicate. Whereas Air Force assets--bombers--are strictly warfare oriented, Navy assets can fill a variety of roles, including continual forward presence, crisis response, power projection, humanitarian assistance, and peacekeeping. Also, the other services require overseas bases for their more limited forward presence and crisis response missions. With both Army and Air Force units pulling out of forward areas, "their *perpetually* limited role in crisis response can only diminish." (George, 1993, p. 69)

With Air Force and Army reliance on overseas base access, the reality is that the U.S. can only really 100 percent depend upon its own American owned overseas bases: U.S. naval platforms. Not only are these "bases" under complete U.S. jurisdiction, but they possess another substantial and totally unique benefit: they are movable. They are the best suited means for forward presence and contingency response, two missions articulated in the National Military Strategy.

B. RECOMMENDATIONS

With U.S. naval forces decreasing to possibly 320 ships by the end of the decade (Polmar, 1993, p. 121), it is imperative that the Navy be able to demonstrate its strengths in areas beyond support to the Army and Air Force. Despite current emphasis on jointness, the Navy necessarily has unique capabilities and should celebrate and proclaim that distinction. That singularity, as well as pronouncement of it, is the key to maintaining the Navy's relevance and protecting it from further, potentially disabling force reductions.

The following should be emphasized to the Congress, which ultimately controls the nation's purse strings:

1) A long-term, permanent negative impact inures from closure of overseas U.S. bases. The lack of overseas bases leads directly to a dearth of overseas presence by U.S. Army and Air Force units. The resultant deficiency can be partially covered by U.S. naval forces operating forward "from the sea." U.S. naval forces are less reliant upon permanent basing arrangements and can utilize politically defused, much less formal port visits not only for replenishment, but also for "showing the flag."

2) The U.S. Navy is the only service capable of rapid, sustained, credible response in most types of contingencies.

A coalition, built on trust which comes from working together, can provide an even bigger, more capable force.

3) With dwindling resources, the Western allies must necessarily rely on coalition warfare. There are multiple reasons for coalition rather than U.S. unilateral activity. Simply put, the U.S. should not and can no longer "manage it all." With budget constraints, lack of public support for the U.S. being the world's policeman, and bases and base access around the world decreasing, the U.S. is forced to "play the U.N. game." Furthermore, the U.S. should not always necessarily be the leader in that game but may sometimes be a supporting participant. Such a status is not all bad; in fact, it is a necessary compromise based on the aforementioned factors. Hence, the U.S. needs to be able to rapidly form and become a part of an effective coalition in crisis. However, in order to be able to do that, the U.S. must sustain positive global relationships. One of the best and most efficient ways to maintain global military relationships is with U.S. naval forces. They are mobile, flexible, and designed to operate in remote regions, as are some other nations' navies. With their forward presence role, they remain the ideal instrument for diplomacy enhancement and continuation.

4) By the year 2000, a much smaller U.S. military and consequently a smaller Navy is envisioned. The question is,

"How much smaller will U.S. naval forces in fact be?" There is one overriding dilemma which makes answering this key question particularly difficult: The smaller the U.S. force, the more dependent that force becomes on allies; with increased dependence on allies, comes a greater need for interaction--which requires forward deployments and consequently a larger number of forces--with those same allies to ensure a viable coalition in time of crisis. Resolving this circular dilemma, and determining the right size for U.S. naval forces, is extremely complex; the intrinsic value of forward deployments and combined exercises, key to making coalition warfare work, must not be overlooked[3]. At the same time, these forward deployments require sufficient U.S. naval forces in order to realize continuous forward presence[4].

Unfortunately, the justification for a larger navy is intangible. There are no real quantifiable measures of effectiveness (MOE's) for forward presence. We are left with the same old deterrence argument: "How much is enough?"

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[3]OPNAVINST 5710.26 of 10 November, 1988, titled "Coalition Strategy Enhancement Program" (CSEP), addresses these concerns.

[4]Historically, forward presence was an inherent capability in naval forces; it was a lesser included case. Now, it has become a national mission, and we cannot assume its inherency in naval forces.

Funding support for the U.S. Navy's future depends on Members of Congress, who rotate in/out at roughly 25 percent per election[5]. The U.S. Navy needs a vigorous program[6] which continually educates them concerning the inherent advantages accrued through forward presence as manifested in the intrinsic value of forward deployments and combined exercises: They make the Navy a better force and force builder.

A coalition thrown together cannot be expected to operate nearly as effectively as one which has been exercising and cooperating all along. It is tempting in this era of cutbacks to reduce funding for exercises; they are an easy target[7]. However, such a move would be counterproductive.

Coalition warfare has become a fact of life. To maintain Navy C3 interoperability with potential coalition partners, the U.S. Navy must continue forward deployments and combined exercises to provide a credible force capable

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[5]This incumbency level was discussed during the Cooke Conference held at the Naval Postgraduate School 2-4 March 1993.

[6]Establishing such a program should be a priority action item for Navy CHINFO and Fleet CINC's.

[7]In fact, during the recent Cooke Conference held at the Naval Postgraduate School (2-4 March 1993), a representative from CINCPACFLT suggested doing exactly that--cutting back on exercises--in response to monetary shortfalls caused by humanitarian relief efforts.

of crisis response but not necessarily sized specifically for crisis response. Without this forward deployed component, the essential key to the sociological dimension of effective C3, effective communications--the vital "C" in C3--cannot be expected, no matter how much is spent on technological improvements to C3 systems.

LIST OF REFERENCES

Asante, Molefi Kete and William B. Gudykunst, *Handbook of International and Intercultural Communication*, Newbury Park, California: Sage Publications, 1989.

Auster, Bruce B., et al., "The Pentagon Under the Gun," *U.S. News & World Report*, 22 March, 1993.

Axelrod, Robert, *The Evolution of Cooperation*, New York: Basic Books, 1984.

Brannion, Douglas, "Multiculturalism and International Trade," in *Intercultural Skills for Multicultural Societies*, ed. Carley H. Dodd and Frank F. Montalvo, Washington, D.C.: SIETAR International (The International Society for Intercultural Education, Training and Research), 1987.

Cherry, Colin, *World Communication: Threat or Promise? A Socio-Technical Approach*, New York: Wiley, 1971.

Clark, Lieutenant Col. D. C. Clark, "Aircraft Visual Recognition Training for Allied Air Defense Forces," *JULLS Number 31517-75889*, 12 March, 1991.

"Command, Control Advances Permeate Combat Successes," *Signal*, May 1991.

Command in War: Gulf Operations, RUSI for Defense Studies, London: Whitehall Paper Series, 1992.

Conduct of the Persian Gulf War, Final Report to Congress, April 1992.

Cushman, Lieutenant General John H., "Command and Control in the Coalition," *U.S. Naval Institute Proceedings*, August 1992.

_____. *Command and Control of Theater Forces: Issues in Mideast Coalition Command*, Cambridge, Massachusetts: Center for Information Policy Research, 1991.

Defense Advanced Research Projects Agency (DARPA) Report, *Simulation Insights*, 18 May 1992.

Defence Committee Tenth Report: Preliminary Lessons of Operation Granby, London: HMSO, 17 July 1991.

Department of Defense Dictionary of Military and Associated Terms, JCS Publication 1, Joint Chiefs of Staff, 1 June 1987.

Desert Storm Lessons Learned, Office of the Secretary of Defense, April 1992.

Dodd, Carley H. and Frank F. Montalvo, eds., *Intercultural Skills for Multicultural Societies*, Washington, D.C.: SIETAR International (The International Society for Intercultural Education, Training and Research), 1987.

Esteve, Jean-Rene, *French Armaments and Communication Interoperability with NATO: A Practical Measure of Political Intentions*, Master's Thesis, Naval Postgraduate School, Monterey, California, December 1983.

Feger, Hubert, "Cooperation Between Groups," in *Cooperation and Prosocial Behaviour*, ed. Robert A. Hinde and Jo Groebel, Cambridge: Cambridge University Press, 1991.

Fulbright, LTC, "Lack of Standardization Agreements," *JULLS Number 31449-59000*, 17 January, 1991.

George, James L., "Where's the Admirals' Revolt?" *U.S. Naval Institute Proceedings*, May 1993.

Good, D. A., "Cooperation in a Microcosm: Lessons from Laboratory Games," in *Cooperation and Prosocial Behaviour*, ed. Robert A. Hinde and Jo Groebel, Cambridge: Cambridge University Press, 1991.

Green, Fitzhugh, *Our Naval Heritage*, New York: The Century Company, 1925.

Gudykunst, William B., and Lauren I. Gumbs, "Social Cognition and Intergroup Communication," in *Handbook of International and Intercultural Communication*, ed. Molefi Kete Asante and William B. Gudykunst, Newbury Park: SAGE Publications, 1989.

Gudykunst, William B., and Y. Y. Kim, *Communicating with Strangers: An Approach to Intercultural Communication*, New York: Random House, 1984.

Harms, L.S., *Intercultural Communication*, New York: Harper & Row, 1973.

Harris, Philip R. and Robert T. Moran, *Managing Cultural Differences*, Houston, Texas: Gulf Publishing Company, 1979.

Hart, Gary and William S. Lind, *America Can Win: The Case for Military Reform*, Bethesda, Maryland: Adler & Adler, 1986.

Haslett, Beth, "Communication and Language Acquisition Within a Cultural Context," in *Language, Communication, and Culture: Current Directions*, ed. Stella Ting-Toomey and Felipe Korzenny, Newbury Park, California: SAGE Publications, 1989.

Hastings, Max, *The Korean War*, New York: Simon and Schuster, 1987.

Hecht, Michael L. et al., "The Cultural Dimensions of Nonverbal Communication," in *Handbook of International and Intercultural Communication*, ed. Molefi Kete Asante and William B. Gudykunst, Newbury Park: SAGE Publications, 1989.

Heim, Lieutenant Colonel Alan P., "'... From the Sea': Steady As She Goes," *U.S. Naval Institute Proceedings*, December 1992.

Henderson, Wm. Darryl, *Cohesion: The Human Element in Combat*, Washington, D.C.: National Defense University Press, 1985.

Hinde, Robert A. and Jo Groebel, eds., *Cooperation and Prosocial Behaviour*, Cambridge: Cambridge University Press, 1991.

Howard, Patricia L., "Copernicus: 'Shifting the Center of the Universe'." *Sea Power*, February 1992.

"Information Exchange Poses Enhanced Warrior Prowess," *Signal*, June 1992.

Instructor Guide, Aircrew Coordination Training, 1991.

Johns, Dr. John H., et al., *Cohesion in the US Military*, Defense Management Study Group on Military Cohesion, Washington, D.C.: National Defense University Press, 1984.

Joint Warfare of the US Armed Forces, Joint Publication 1, 11 November 1991.

Korol'kov, Colonel-General Boris Fedorovich, "Friendship Strengthened in Combat," *Hawk*, May 1990.

LaPlante, Rear Adm. J.B., "It's Time for the 'Gators'," *U.S. Naval Institute Proceedings*, May 1993.

Lewis, Dr. William H. and Dr. Thomas A. Julian, eds., *Military Implications of United Nations Peacekeeping Operations*, Proceedings of the Workshop, 17 December 1992.

Loescher, Lieutenant Commander Michael S., "Copernicus Offers a New Center of the Universe," *U.S. Naval Institute Proceedings*, January 1991.

Macke, Vice Adm. Richard C., *C4I for the Warrior*, February 1992.

Mallion, BGen Richard, "Interoperability: Theory and Practice in JTC3A," in *Control of Joint Forces*, ed. LTGen Clarence E. McKnight, Fairfax, Virginia: AFCEA International Press, 1989.

Mayor, Federico, "The Role of UNESCO in the development of International Cooperation," in *Cooperation and Prosocial Behaviour*, ed. Robert A. Hinde and Jo Groebel, Cambridge: Cambridge University Press, 1991.

Munroe, Neil, "Pentagon Budget Ax Spares C3 Purchases," *Defense News*, 19-25 April 1993.

N-8 Supporting Paper on the OPNAV Assessment Process, 3 March, 1993.

Oakley, Thomas P., *Command Control for War and Peace*, Washington, D.C.: National Defense University Press, January 1992.

O'Keefe, Sean, Adm. Frank B. Kelso II, and Gen. Carl E. Mundy, Jr., "...From the Sea," Navy and Marine Corps White Paper, September 1992 in *U.S. Naval Institute Proceedings*, November 1992.

O'Rourke, Ronald, *CRS Report for Congress: Naval Forward Deployments and the Size of the Navy*, 13 November 1992.

OPNAV Instruction 1542 Draft, 23 March 1993.

Orr, George E., *Combat Operations C3I: Fundamental and Interactions*, Air University Press, July 1983.

Personal interview with Lieutenant James Brockett, PHD Student, Naval Postgraduate School, April 1993.

Pendley, William T, "U.S. Security Strategy in East Asia for the 1990s," *Strategic Review*, Summer 1992.

Powers, W.G., and D.N. Lowery, "Basic Communication Fidelity: A Fundamental Approach," in *Competence in Communication*, ed. R.N. Bostrom, Beverly Hills, CA: Sage, 1984.

Rainbow, Fred and John Miller, "Be Careful of What You Ask for ..." (Interview with SECNAV Sean O'Keefe) *U.S. Naval Institute Proceedings*, January 1993.

Rawles, James W., "MSE: The Army Goes Cellular," *Defense Electronics*, February 1989.

Rein, Vice Adm. Torolf, Opening Address at the AFCEA Europe Oslo Symposium, 26 April 1989.

Roth, Capt., "Declining Sources make Coalition Warfare Building More Difficult," *JULLS Number 51358-25100*, 13 September, 1991.

Pakenham, Capt. W.T. (RN), *Naval Command and Control*, Brassey's Defence Publishers, 1989.

Schwarzkopf, Gen. H. Norman with Peter Petre, *It Doesn't Take a Hero*, New York: Bantam Books, October 1992.

Schmidt, Lieutenant Col., "Interoperability in Coalition Warfare," *JULLS Number 14454-67200*, 4 March 1991.

Shachnow, Maj. Gen. Sidney, "Intercultural Communication: The Need for Conceptual Skills," *Special Warfare*, February 1993.

Slade, Stuart, "Talk to Me . . . Please!" *Naval Forces*, July 1992.

Sohlberg, Dr. Ragnhild, Banquet Address at the AFCEA Europe Oslo Symposium, 26 April 1989.

Stares, Paul B., *Command Performance: The Neglected Dimension of European Security*, Washington, D.C.: The Brookings Institution, 1991.

Statement on the Defence Estimates 1992, London: HMSO, July 1992.

Straub, C.C., *The Unit First: Keeping the Promise of Cohesion*, Washington, D.C.: National Defense University Press, 1988.

Telephone interview with LCDR William Jacobs, CENTCOM Communications Officer, March 1993.

Ting-Toomey, Stella, "Identity and Interpersonal Bonding," in *Handbook of International and Intercultural Communication*, ed. Molefi Kete Asante and William B. Gudykunst, Newbury Park: SAGE Publications, 1989.

Ting-Toomey, Stella and Felipe Korzenny, eds., *Language, Communication, and Culture: Current Directions*, Newbury Park, California: SAGE Publications, 1989.

Todd, Greg, "C1 Catharsis," *Army*, February 1986.

Townsend, LTC, "Combined Planning Process," *JULLS Number 70159-14239*, 7 January, 1991.

Tzu, Sun, *The Art of War: The Oldest Military Treatise in the World*, trans. Lionel Giles, Harrisburg, Pennsylvania: Military Service Publishing Co., 1944.

Tzu, Sun, *The Art of War*, trans. Samuel B. Griffith, London: Oxford University Press, 1963.

Wentz, Larry K., "Communications Support for the High Technology Battlefield," in *The First Information War*, ed. Alan D. Campen, Fairfax, Virginia: AFCEA International Press, October 1992.

Wickham, Gen. John A. Jr., "Jointness and Defense Decision Making" in *Control of Joint Forces*, ed. LTGen Clarence E. McKnight, Fairfax, Virginia: AFCEA International Press, 1989.

Vlahos, Michael, "'... From the Sea' And the Politics of Change," *U.S. Naval Institute Proceedings*, February 1993.

Yost, David S., *France and Conventional Defense in Central Europe*, Marina del Rey, California: European American Institute for Security Research, Spring 1984.

_____. *France and the Gulf War: Political-Military Lessons Learned*, Draft, May 1992.

Young, Thomas-Durell, "Preparing the Western Alliance for the Next Out-of-Area Campaign," *Naval War College Review*, Summer 1992.

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